AVIATION

USER MANUAL

KPM202
KPM203
TK202
TK203

CUSTOM®

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UNLESS OTHERWISE SPECIFIED, THE INFORMATION GIVEN IN THIS MANUAL
ARE REFERRED TO ALL MODELS IN PRODUCTION AT THE ISSUE DATE OF THIS DOCUMENT.

GENERAL SAFETY INFORMATION

Your attention is drawn to the following actions that could compromise the characteristics of the product:

- Read and retain the instructions which follow.
- Follow all indications and instructions given on the device.
- Make sure that the surface on which the device rests is stable. If it is not, the device could fall, seriously damaging it.
- Make sure that the device rests on a hard (non-padded) surface and that there is sufficient ventilation.
- When positioning the device, make sure cables do not get damaged.
- Use the type of electrical power supply indicated on the device label. If uncertain, contact your dealer.
- Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
- Do not block the ventilation openings.
- Do not insert objects inside the device as this could cause short-circuiting or damage components that could jeopardize printer functioning.
- Do not carry out repairs on the device yourself, except for the normal maintenance operations given in the user manual.
- Make sure that there is an easily-accessible outlet with a capacity of no less than 10A closely to where the device is to be installed.
- Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
- Before any type of work is done on the machine, disconnect the power supply.
- Do not touch the head heating line with bare hands or metal objects. Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.

GENERAL INSTRUCTIONS

CUSTOM S.p.A. declines all responsibility for accidents or damage to persons or property occurring as a result of tampering, structural or functional modifications, unsuitable or incorrect installations, environments not in keeping with the equipment's protection degree or with the required temperature and humidity conditions, failure to carry out maintenance and periodical inspections and poor repair work.

CE THE CE MARK AFFIXED TO THE PRODUCT CERTIFY THAT THE PRODUCT SATISFIES THE BASIC SAFETY REQUIREMENTS.

The device is in conformity with the essential Electromagnetic Compatibility and Electric Safety requirements laid down in Directives 2006/95/CE and 2004/108/CE inasmuch as it was designed in conformity with the provisions laid down in the following Standards:

- EN 55022 Class B *(Limits and methods of measurements of radio disturbance characteristics of Information Technology Equipment)*
- EN 55024 *(Information Technology Equipment – Immunity characteristics – Limits and methods of measurement)*
- EN 60950-1 *(Safety of information equipment including electrical business equipment)*

GUIDELINES FOR THE DISPOSAL OF THE PRODUCT

The crossed-out rubbish bin logo means that used electrical and electronic products shall NOT be mixed with unsorted municipal waste. For more detailed information about recycling of this product, refer to the instructions of your country for the disposal of these products.

- Do not dispose of this equipment as miscellaneous solid municipal waste, but arrange to have it collected separately.
- The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
- In accordance with European Directive WEEE 2002/96/EC, special collection points are available to which to deliver waste electrical and electronic equipment and the equipment can also be handed over to a distributor at the moment of purchasing a new equivalent type.
- The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
- Unauthorised disposal of waste electrical and electronic equipment is punishable by law with the appropriate penalties.

The format used for this manual improves use of natural resources reducing the quantity of necessary paper to print this copy.

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1 INTRODUCTION

1.1 Document structure

This document includes the following chapters:

1	INTRODUCTION	information about this document
2	DESCRIPTION	general description of device
3	INSTALLATION	information required for a correct installation of the device
4	OPERATION	information required to make the device operative
5	CONFIGURATION	description of the configuration parameters of the device
6	MAINTENANCE	information for a correct periodic maintenance
7	SPECIFICATION	technical specification for the device and its accessories
8	ACCESSORIES	description and installation of the available accessories for the device
9	ALIGNMENT	information required for managing the paper alignment
10	TECHNICAL SERVICE	information required for contacting the technical service
11	ADVANCED FUNCTIONS	information about special functions available with the device

1.2 Explanatory notes used in this manual

NOTE:	Gives important information or suggestions relative to the use of the device
ATTENTION:	Gives information that must be carefully followed to guard against damaging the device
DANGER:	Gives information that must be carefully followed to guard against operator injury or damage

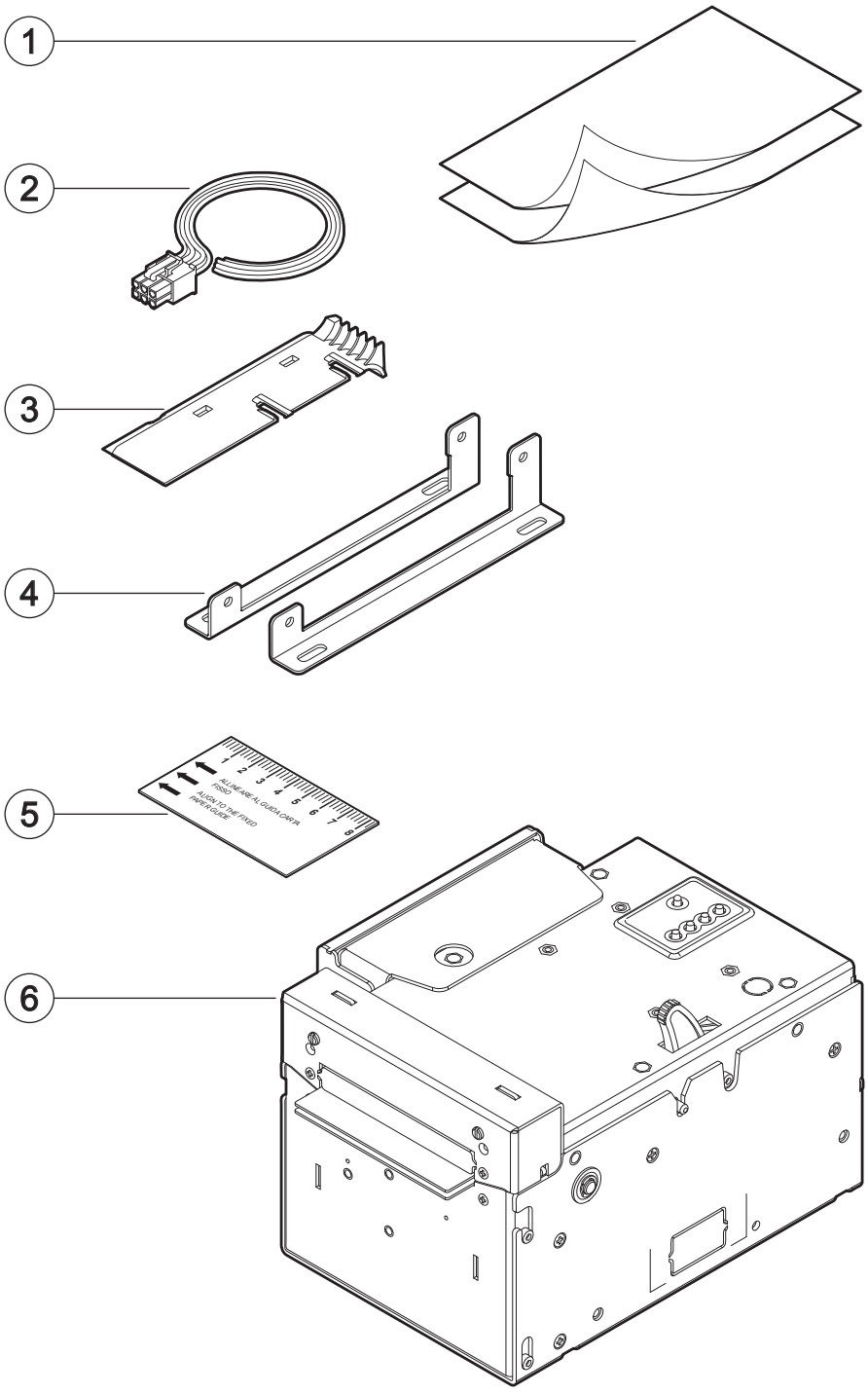
2 DESCRIPTION

2.1 Box content

Remove the device from its carton being careful not to damage the packing material so that it may be re-used if the device is to be transported in the future.
Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.

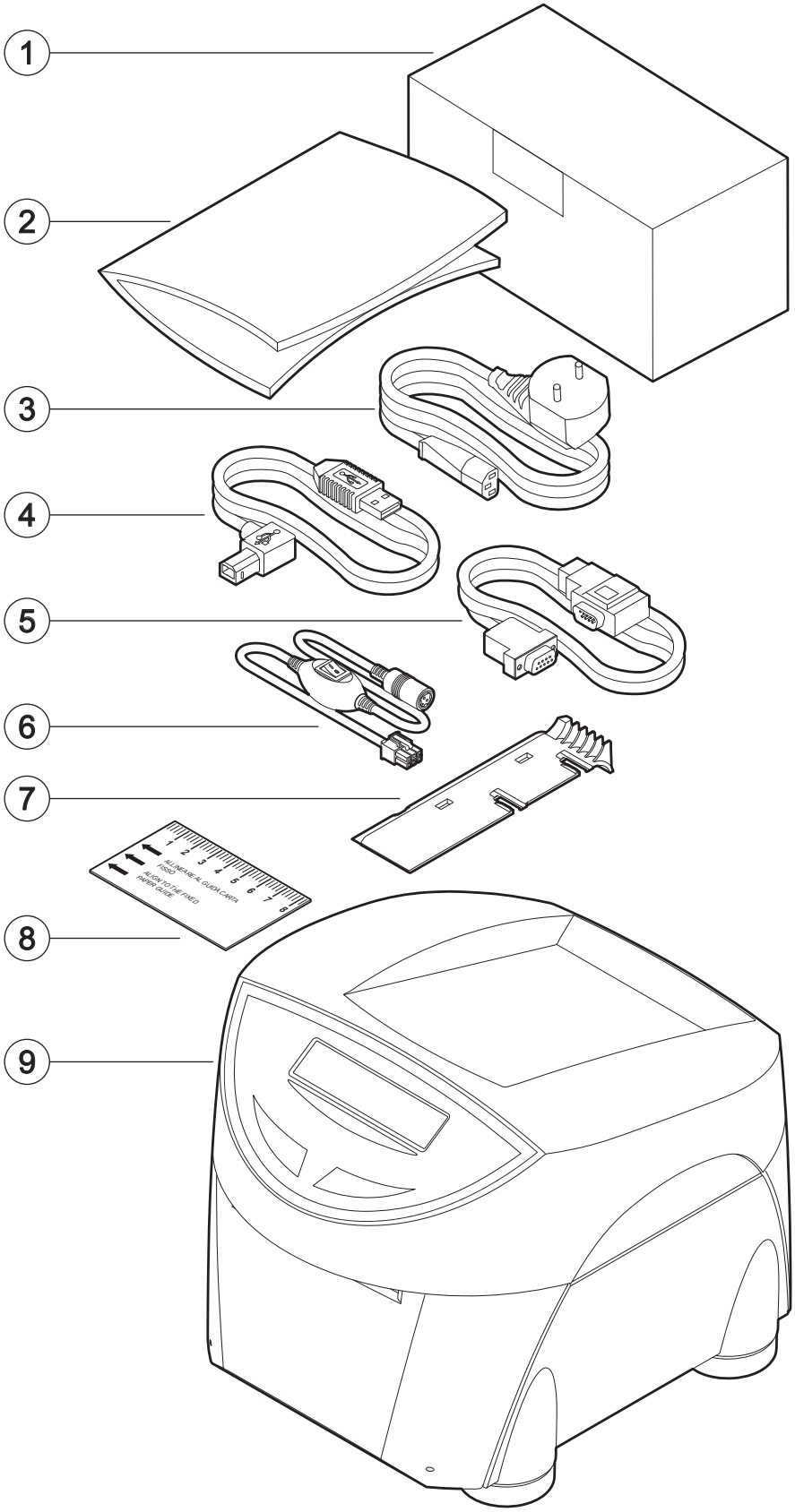
KPM202, KPM203

1. Installation instruction sheet
2. Power supply cable
3. Spacer for paper width <40mm
4. Additional fixing bracket
5. Ruler
6. Device



TK202, TK203

1. Power supply
2. Short guide
3. Power supply cable 220V
4. USB cable
5. Serial cable
6. Pwer supply 24V
7. Spacer for paper width <40mm
8. Ruler
9. Device



- Open the device packaging.
- Take out the device.
- Take out the rest of the content.
- Keep the box, trays and packing materials in the event the device must be transported/shipped in the future.

2.2 Device components: external views

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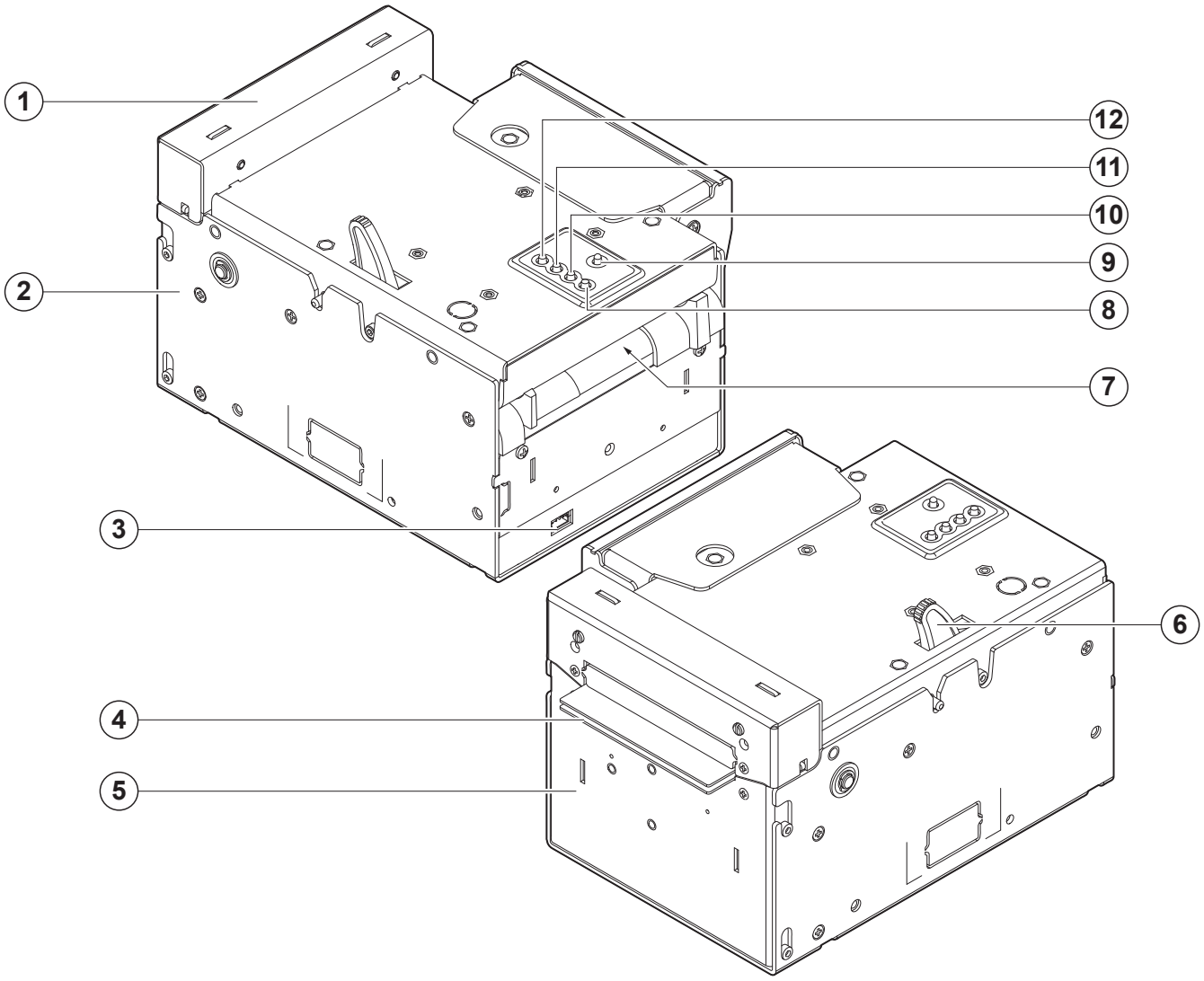
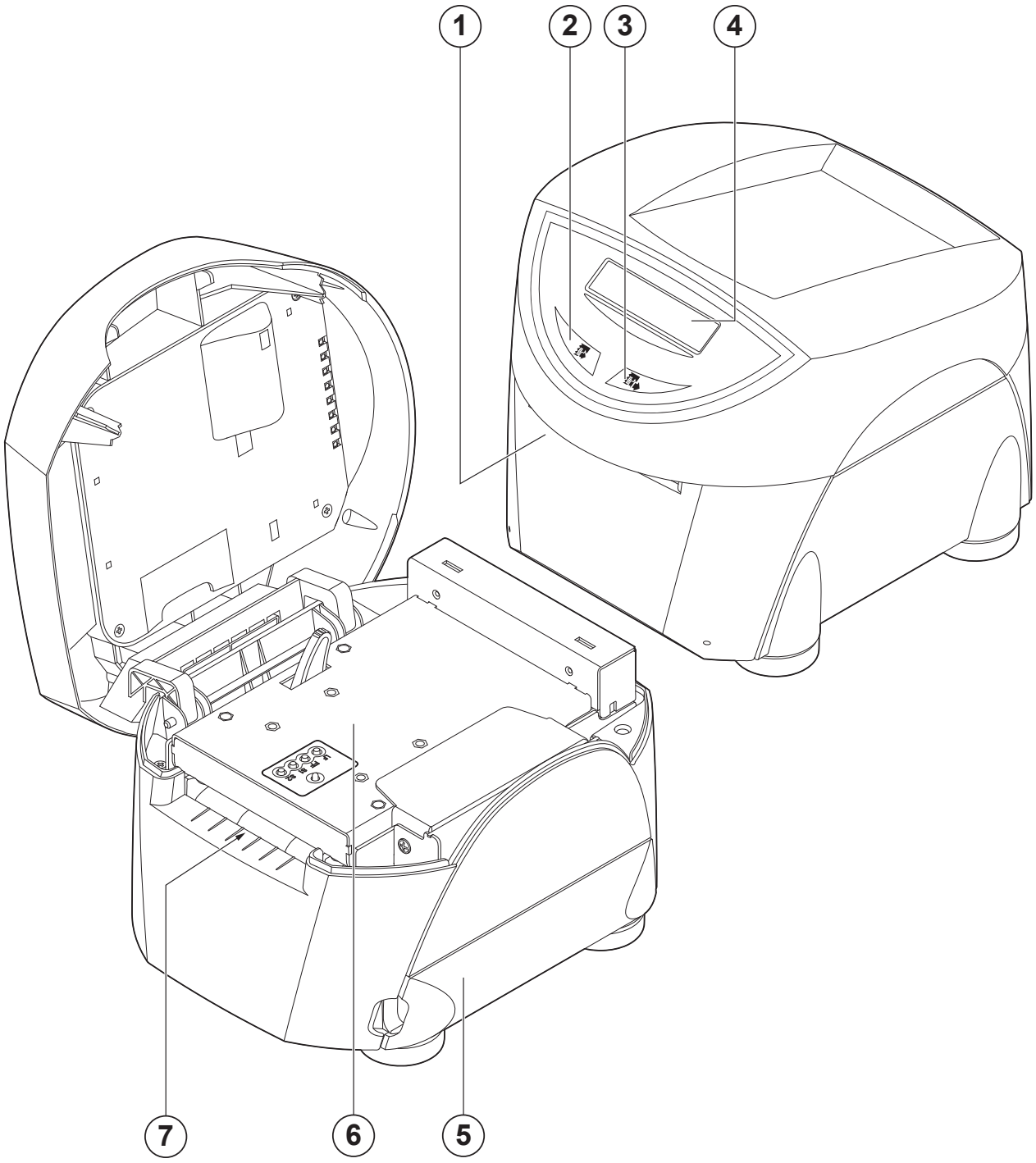
1. Printing head group
2. Device chassis
3. External near paper end sensor connector
4. Paper out
5. Frontal cover
6. Opening lever for upper cover
7. Paper input
8. S2 key
9. Status led
10. S1 key
11. FORM FEED key
12. LINE FEED key



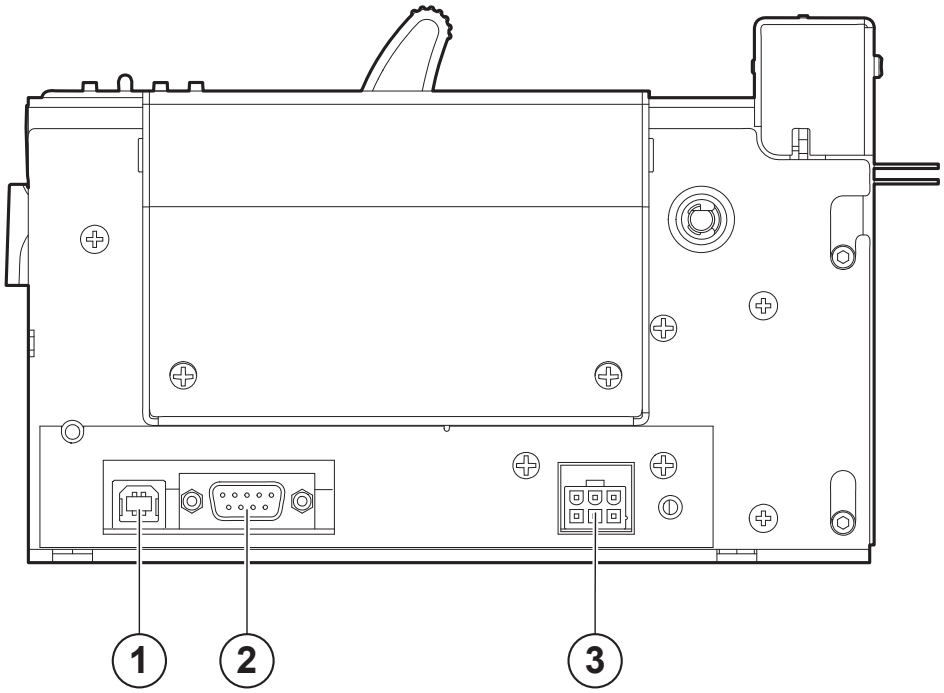
TK202, TK203

1. Paper out
2. FORM FEED key
3. LINE FEED key
4. Display
5. Connectors cover
6. Internal printer (see previous pages)
7. Paper input



2.3 Device components: connector view

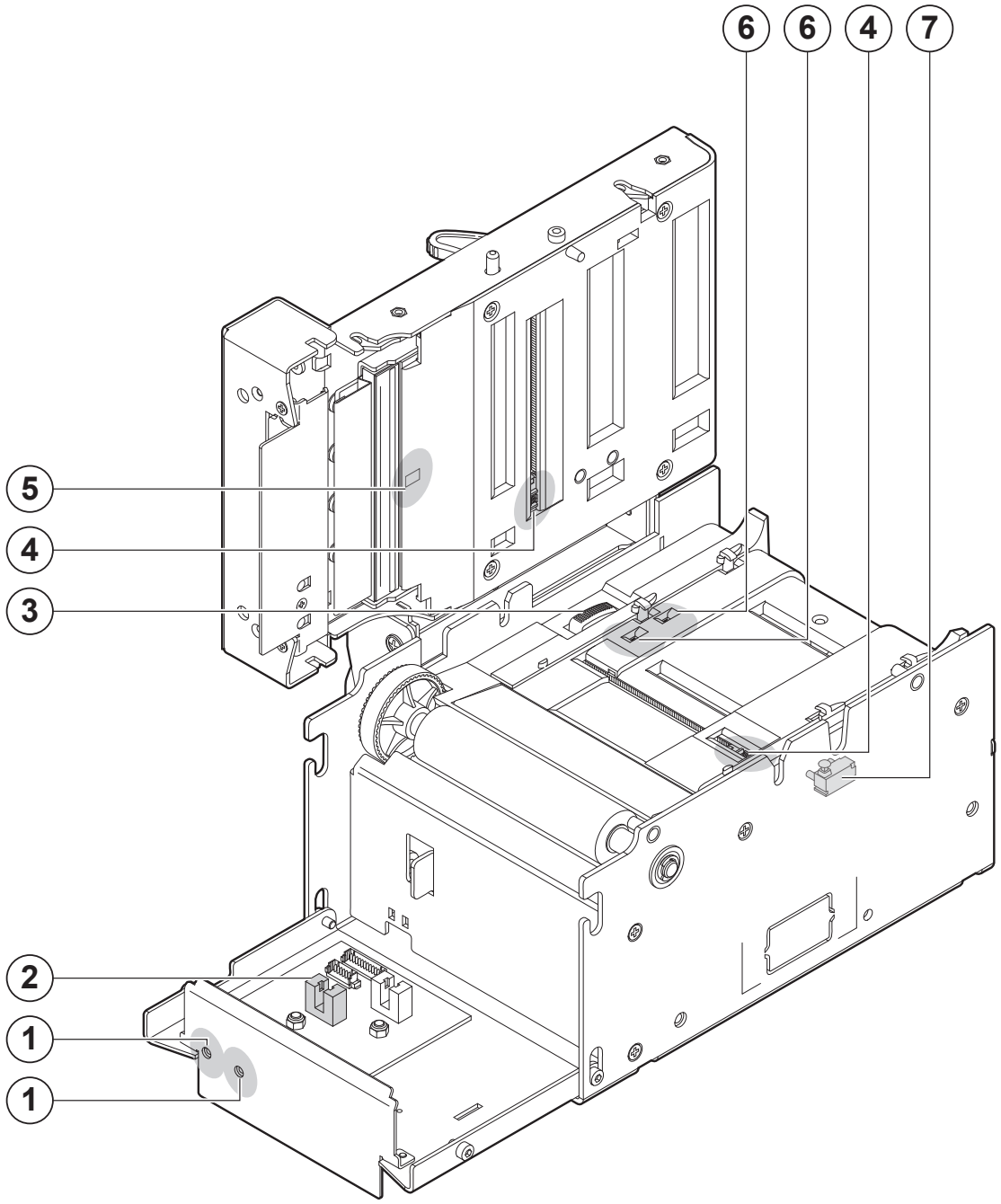
1. USB port
2. RS232 serial port
3. Power supply port



NOTE: For ease of reference, it is represented only the internal printer group without the external plastic chassis.

2.4 Device components: internal view

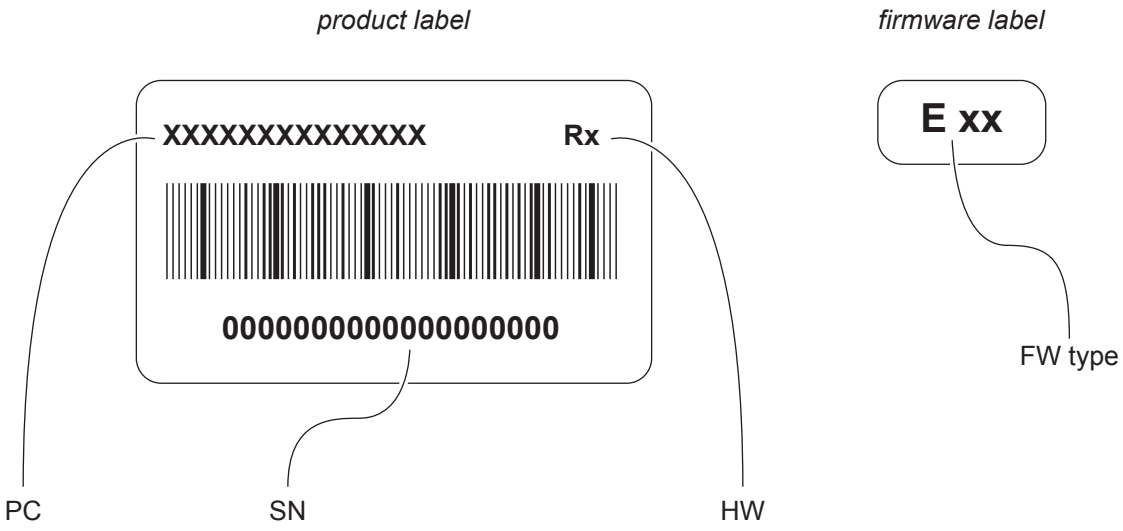
1. Paper out presence
2. Opening/closing front cover sensor
3. Unlocking button for mobile paper guide
4. Mobile sensors for notch
5. Head temperature sensor
6. Sensor of paper presence
7. Opening/closing upper cover sensor



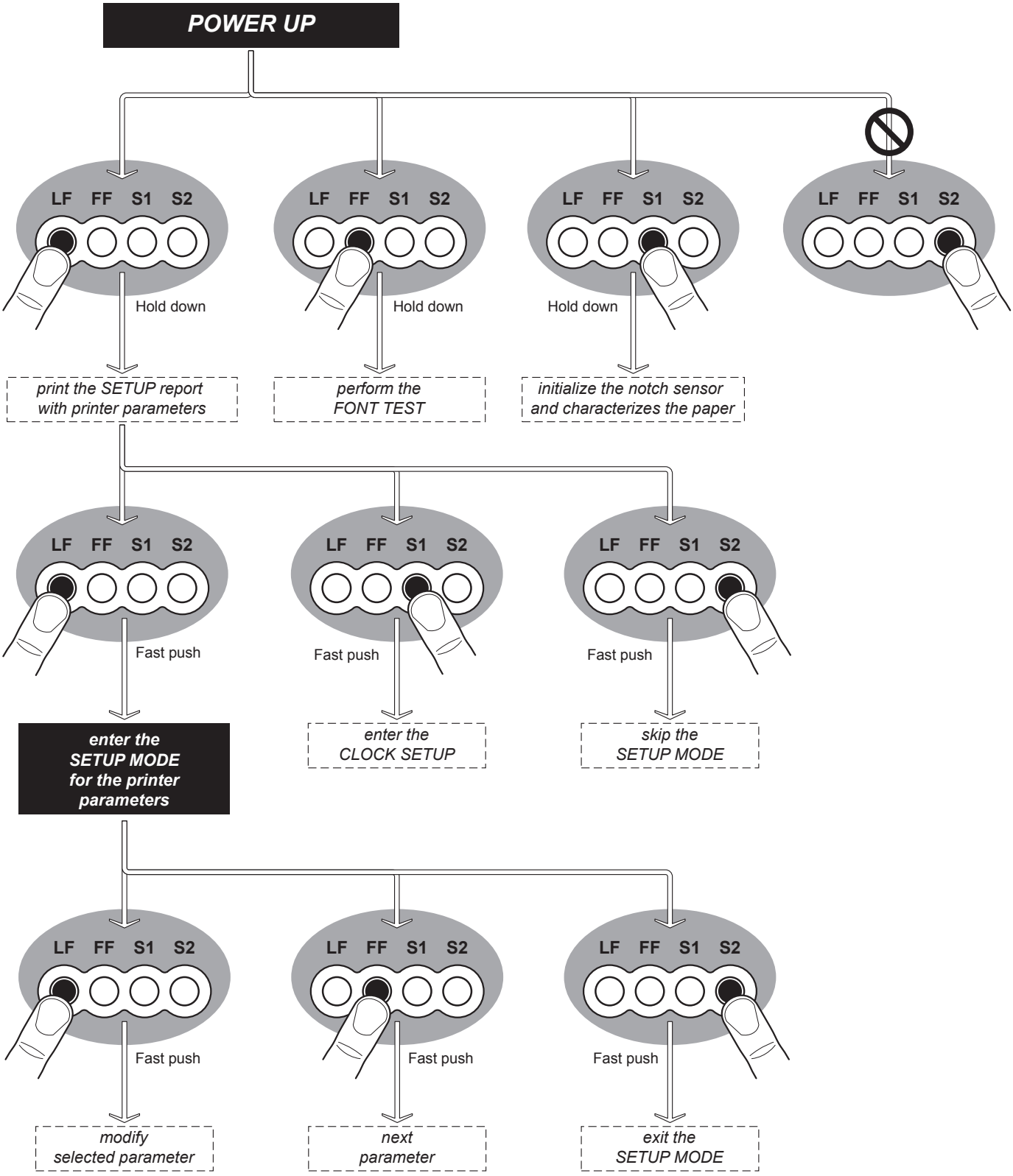
NOTE: For ease of reference, it is represented only the internal printer group without the external plastic chassis.

2.5 Device labels

PC = Product code (14 digits)
SN = Serial number
HW = Hardware release
FW type = Firmware type

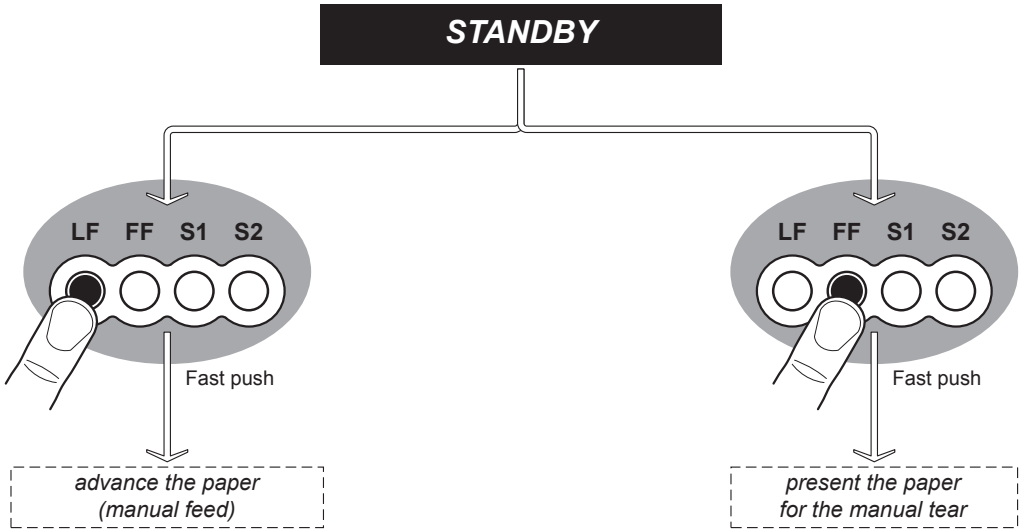


2.6 Key functions: power up



NOTE:
During power-up, do not press the S2 key because the device enter in a test modality that becomes unusable by keys; if this event occurs then turn off the device and turn on without pressing any key.

2.7 Key functions: standby



2.8 Status led flashes

The Status led indicates hardware status of device. Given in the table below are the various led signals and the corresponding device status.

STATUS LED			DESCRIPTION
-	○	***OFF***	DEVICE OFF
GREEN	●	***ON***	DEVICE ON: NO ERROR
GREEN COMMUNICATION STATUS	●	***x 1***	RECEIVE DATA
		x 2	RECEPTION ERRORS (PARITY, FRAME ERROR, OVERRUN ERROR)
		x 3	COMMAND NOT RECOGNIZED
		x 4	COMMAND RECEPTION TIME OUT
YELLOW RECOVERABLE ERROR	●	***x 2***	HEADING OVER TEMPERATURE
		x 3	PAPER END
		x 4	PAPER JAM
		x 5	POWER SUPPLY VOLTAGE INCORRECT
		x 6	COVER OPEN
RED UNRECOVERABLE ERROR	●	***3 x***	RAM ERROR
		4 x	EEPROM ERROR
		6 x	FRONTAL COVER OPEN

2.9 Messages on display

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The display shows the firmware release, a device status message and the outcome of the last sent command (see following image).

The possible status messages are the following:

- ONLINE The device is ready (standby message)
- OFFLINE The device is in a “busy” condition (during commands sending, on paper jam, and so on)
- LINK DOWN The serial connection cable is unplugged
- COVEROPEN The upper cover is open
- NOPAPER No paper loaded into the device

The possible outcomes of commands are several and they may be divided into two groups:

1. Successful outcome, which contains the OK answer to the last command (for example, PTOK)
2. Not successful outcome, which reports an error code (for example, ERR8)

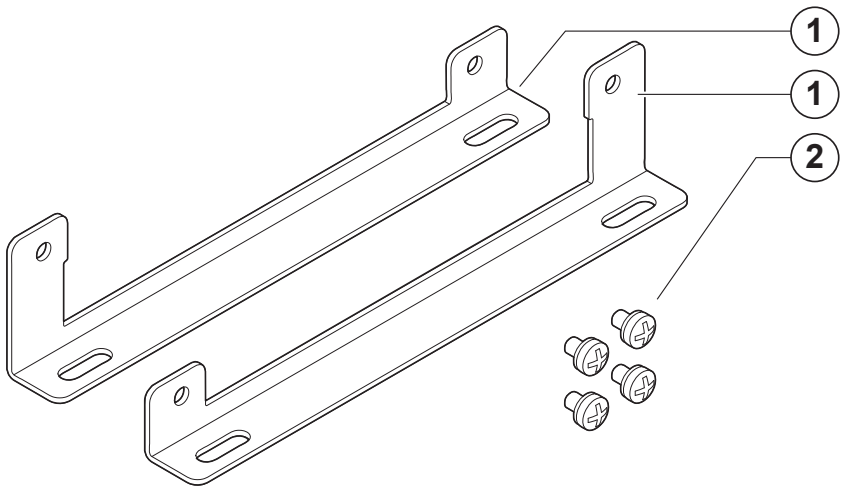
3 INSTALLATION

3.1 Fixing brackets

KPM202, KPM203

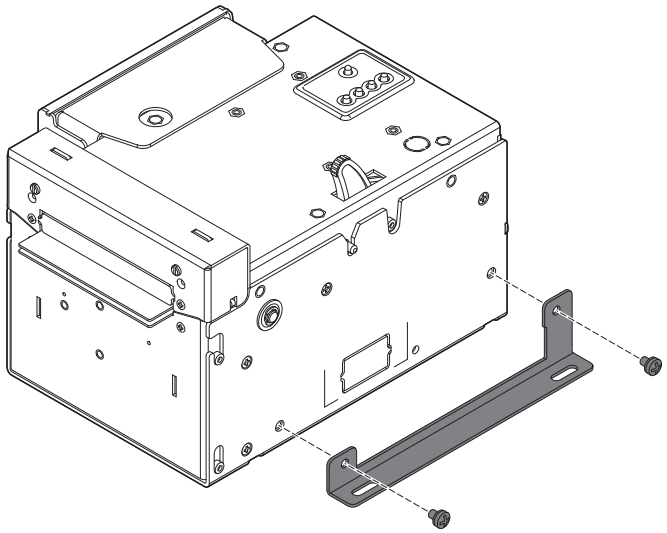
The device includes a kit for the assembly of two additional fixing brackets (see following figure).

The kit contains:
1. Two fixing brackets;
2. No.4 fixing screws.



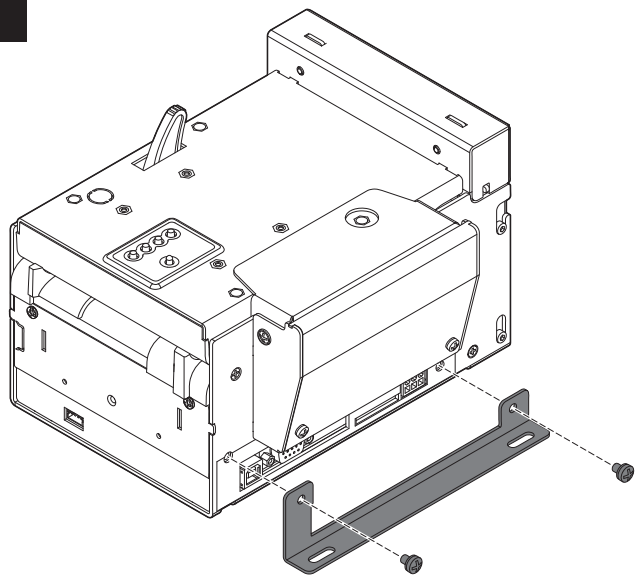
For the assembly procedure, proceed as follows:

1



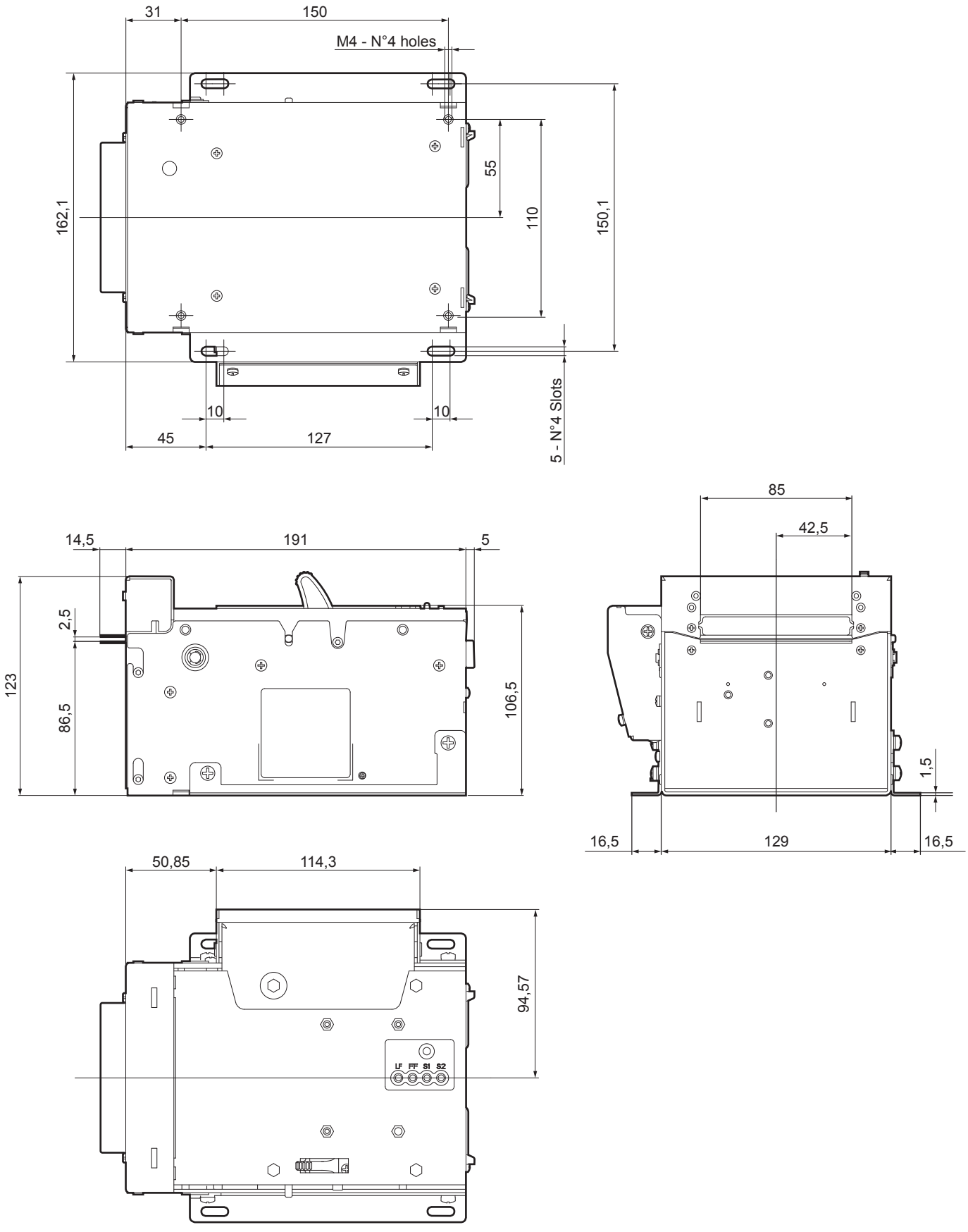
Fix the bracket on
the right side of the device.

2



Fix the bracket on
the left side of the device.

The following figure shows the device overall dimensions with the two additional brackets.



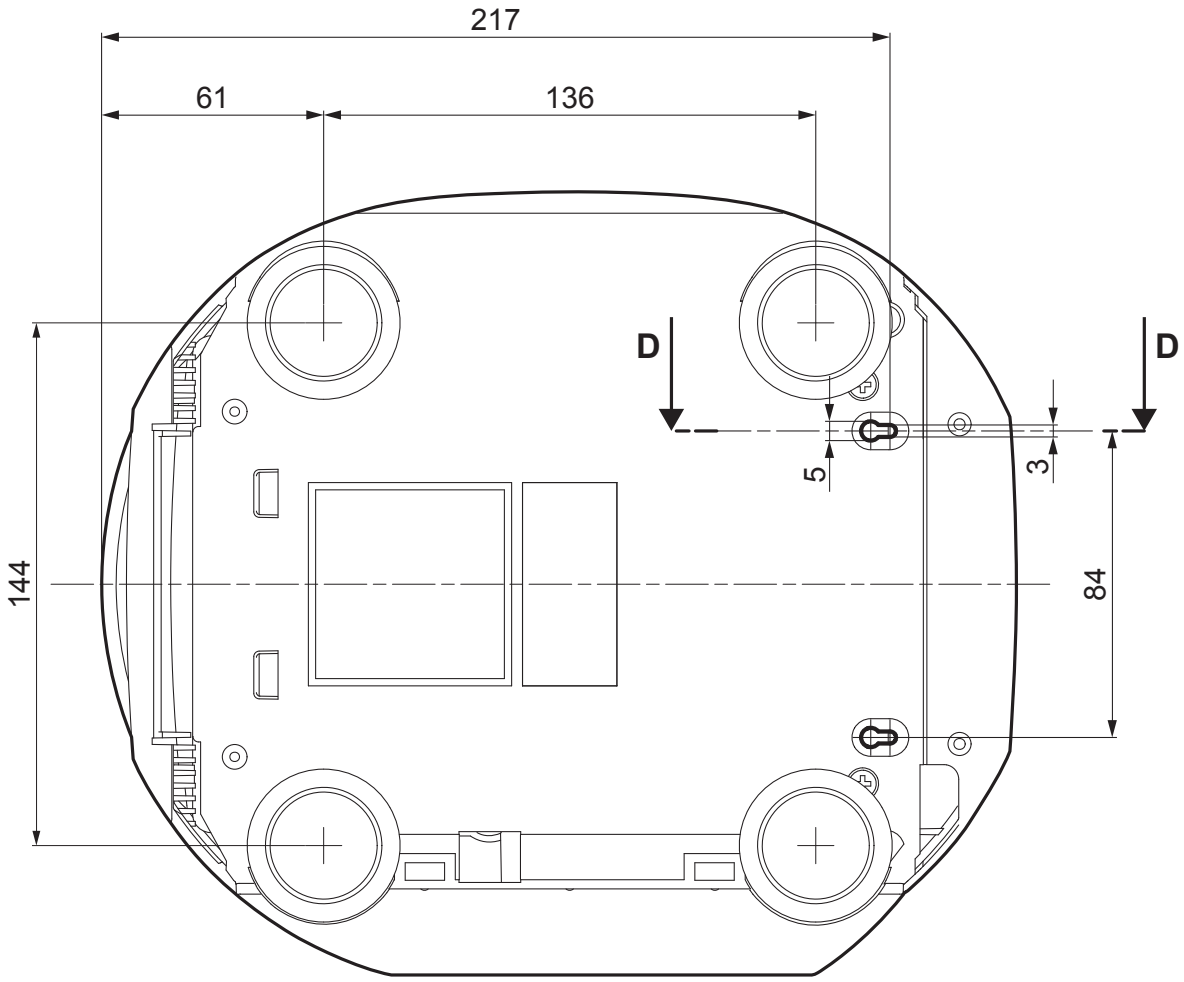
NOTE: All the dimensions shown in figures are in millimetres.

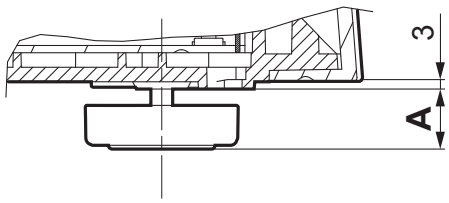
3.2 Fixing slots

TK202, TK203

The device is provided with two slots for the mounting of the machine on desk.

The slots are placed at the bottom of the machine (see following figure)





SECTION D-D

The height A shown in the previous figure varies according to the accessory mounted to the device (see Chapter 9).

Arrange the desk with two fixing pins according to the measures shown in the previous page and the values of the height A listed in the table below.

CONFIGURATION	HEIGHT
Device	12.5 mm
Device with paper roll holder (cod.974BA010000312)	16 mm
Device with plastic ticket tray (cod.976BD010000001)	18 mm
Device with metallic ticket tray (cod.976BB010000003, cod.976BB010000002)	14.5 mm

3.3 Connections

The following figure shows the possible connections for the device.

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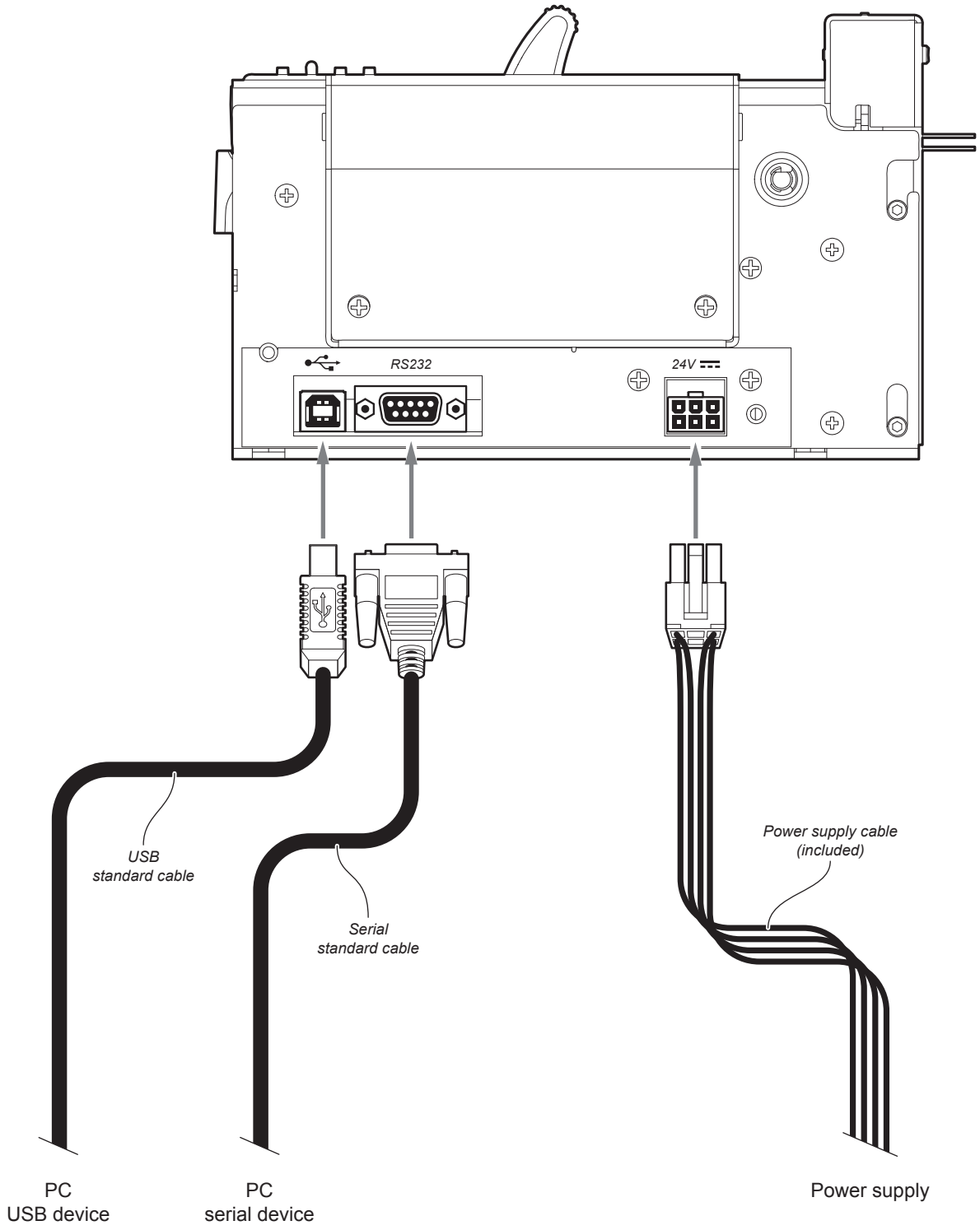
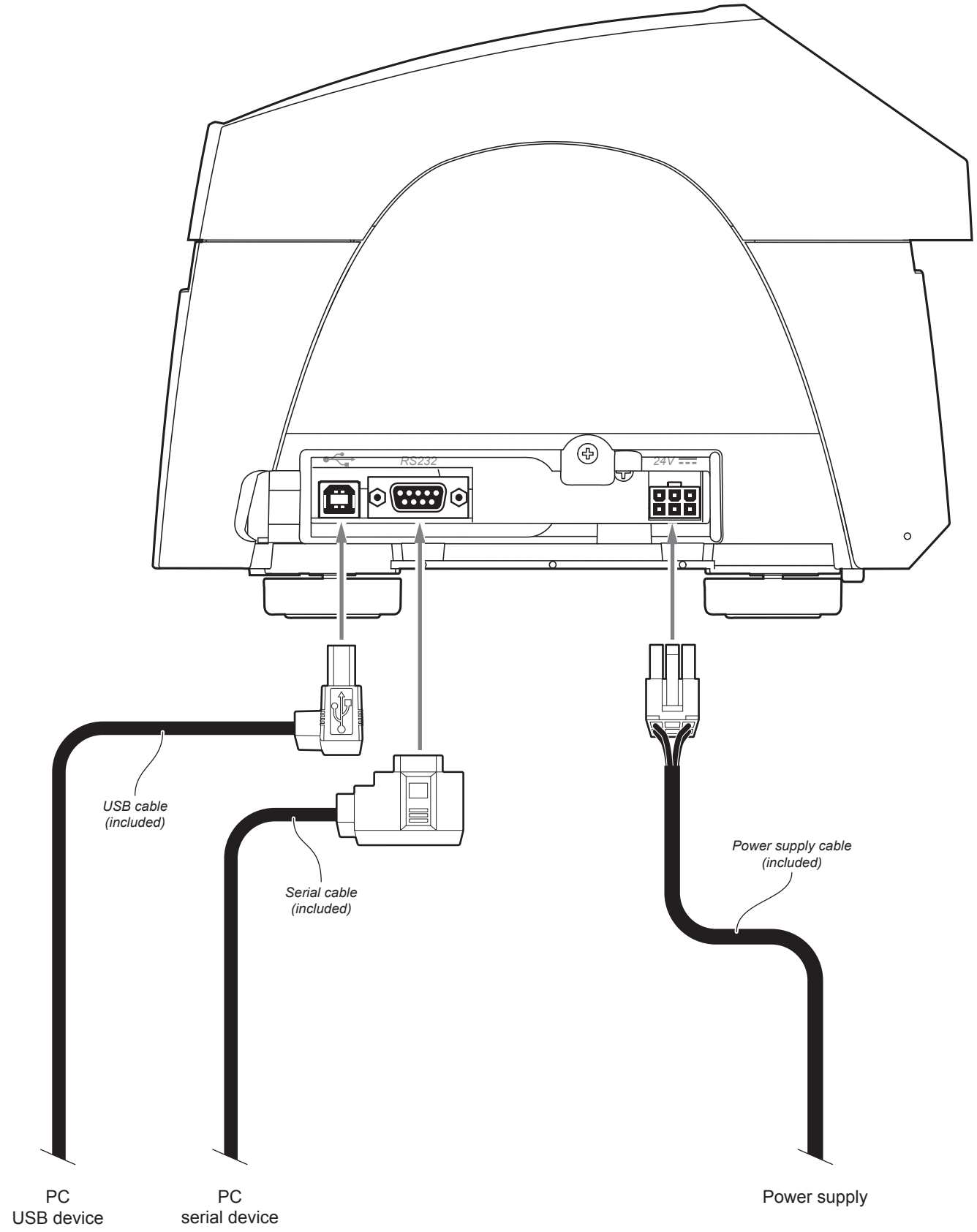


ATTENTION: In some using conditions, we recommend the installation of a ferrite core on the power supply cable.

NOTE: If serial and USB connectors are inserted, communication port is USB.

TK202, TK203



ATTENTION: In some using conditions, we recommend the installation of a ferrite core on the power supply cable.

NOTE: If serial and USB connectors are inserted, communication port is USB.

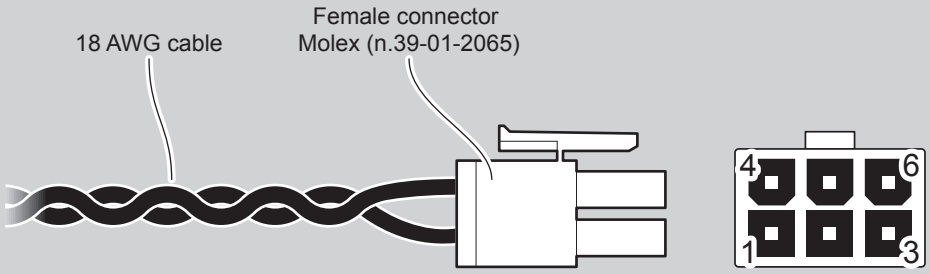
3.4 Pinout

POWER SUPPLY
Male Molex connector vertical (no. 39-30-0060)

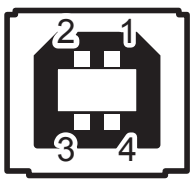
J26	1	+24 Vdc
	2	+24 Vdc
	3	+24 Vdc
	4	GND
	5	GND
	6	GND

ATTENTION:
Respect power supply polarity.

NOTE:
Power supply cable
The following figure shows the connector pinout of the power supply cable for the device:

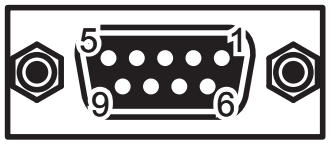


PIN	*Cable color*	*Signal*
1	*Red*	*+24V*
2	*not connected*	*+24V*
3	*Red*	*+24V*
4	*Black*	*GND*
5	*not connected*	*GND*
6	*Black*	*GND*



USB INTERFACE
Female USB type B connector

J13	1	USB-VBUS (out)
	2	PD -0
	3	PD +0
	4	GND



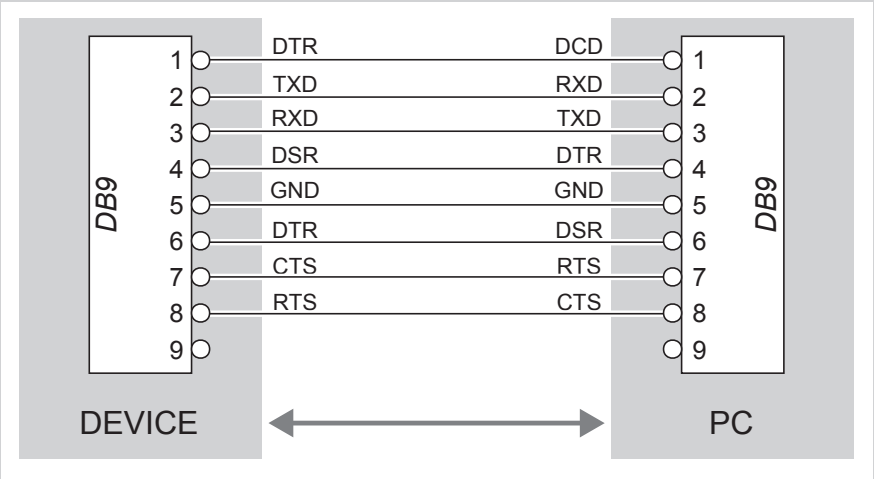
RS232 SERIAL INTERFACE

Female DB9 connector

J1	1	DCD	
	2	TX	During transmission, takes the values “0” and “1” depending on data
	3	RX	During reception, takes the values “0” and “1” depending on data
	4	DSR	
	5	GND	
	6	DTR	When “1”, device is power on
	7	CTS	
	8	RTS	When “1”, device is ready to receive data
	9	n.c.	

NOTES:
Given the presence of the RS232 standard, logic value “0” corresponds to a voltage level of between +3Vdc and +15Vdc and logic value “1” corresponds to a voltage level of between -3Vdc and -15Vdc.

DEVICE > PC connection
The following picture shows an example of connection between the device and a personal computer using a 9 pin RS232 serial connector:



When use a serial cable, we recommend the installation of a ferrite core on the power supply cable.

3.5 Driver and SDK

The drivers are available for the following operating system:

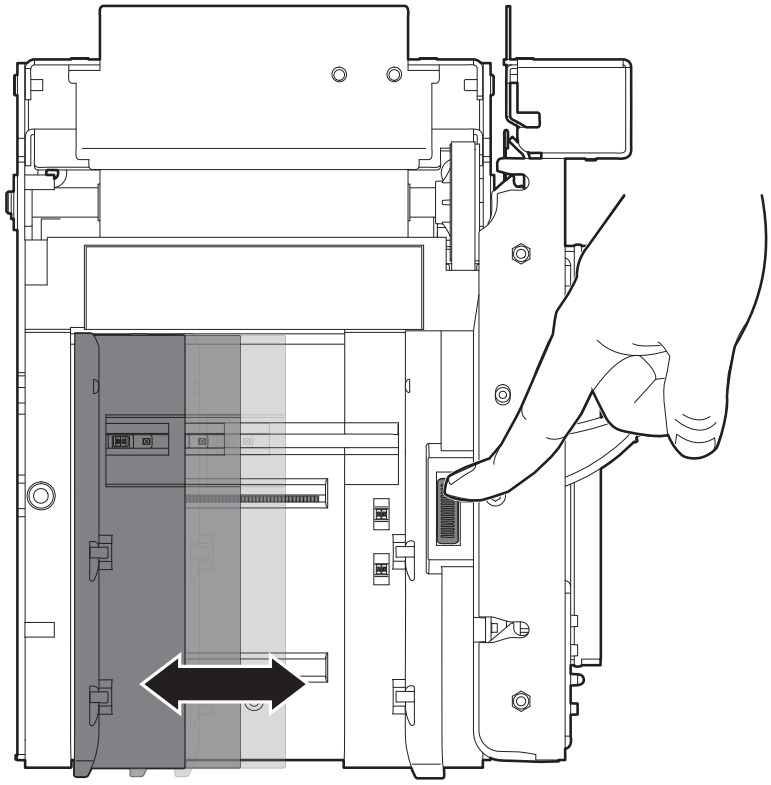
OPERATING SYSTEM	DESCRIPTION	INSTALLATION PROCEDURE
Windows	Driver for Windows XP	From the START menu, press Run and type-in the path where the SW was saved on your PC, then click OK. Follow the instructions that appear on the screen to install the driver.
	Driver for Windows VISTA (32/64bit)	
	Driver for Windows 7 (32/64bit)	
	Driver for Windows 8 (32/64bit)	
	Driver for Windows 8.1 (32/64bit)	
	Driver for OPOS	
Linux	Driver for Linux (32/64bit)	Follow the instruction get back on the README.TXT file. You can find it in the software package downloaded in advance.
Android	SDK for CustomAndroidAPI	Extract the zipped folder to the destination path desired. Follow the instructions present in the software package that you downloaded on how to install and use the SDK.
iOS	SDK for CustomiOSApi	Extract the zipped folder to the destination path desired. Follow the instructions present in the software package that you downloaded on how to install and use the SDK.

NOTE:
All drivers can be found in the DOWNLOAD section of the web site www.custom.biz.

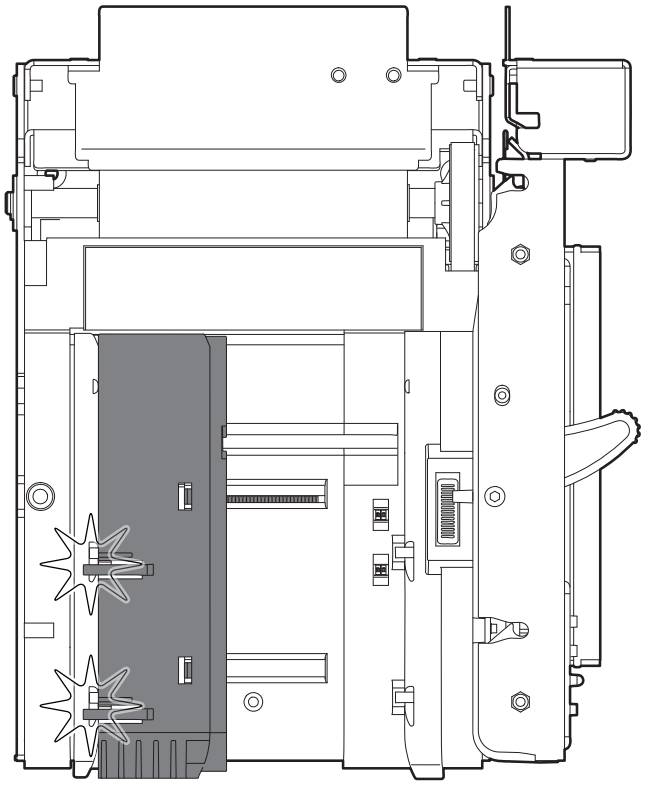
4 OPERATION

4.1 Adjusting paper width

Paper width may be adjusted from 40mm to 82.5mm by pressing the unlocking button and moving the adjustable paper guide as shown in the figure.



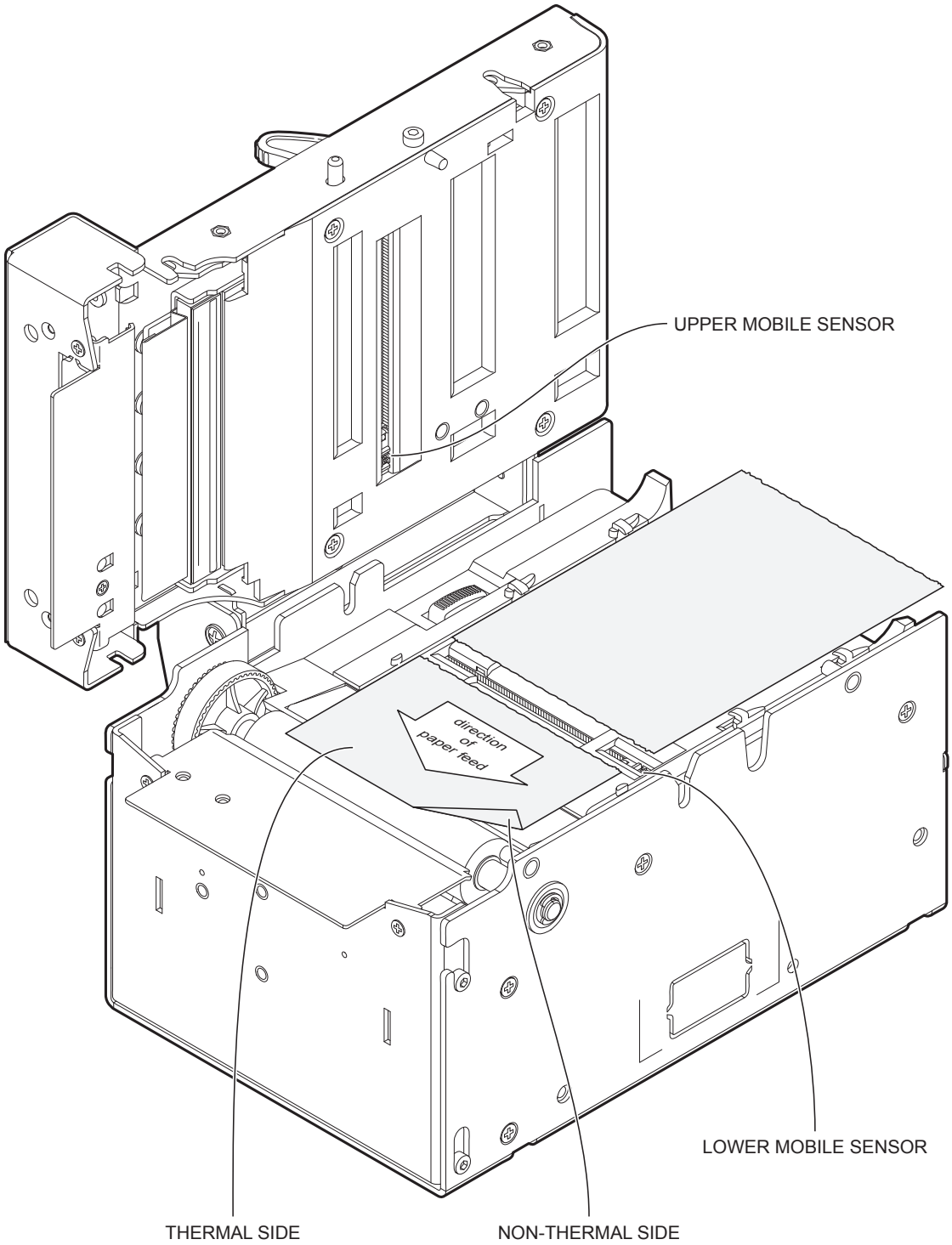
To manage paper width from 20mm to 40 mm, apply the spacer on the adjustable paper guide (see following figure), then adjust the paper width.



NOTE: For ease of reference, it is represented only the internal printer without the external plastic chassis.

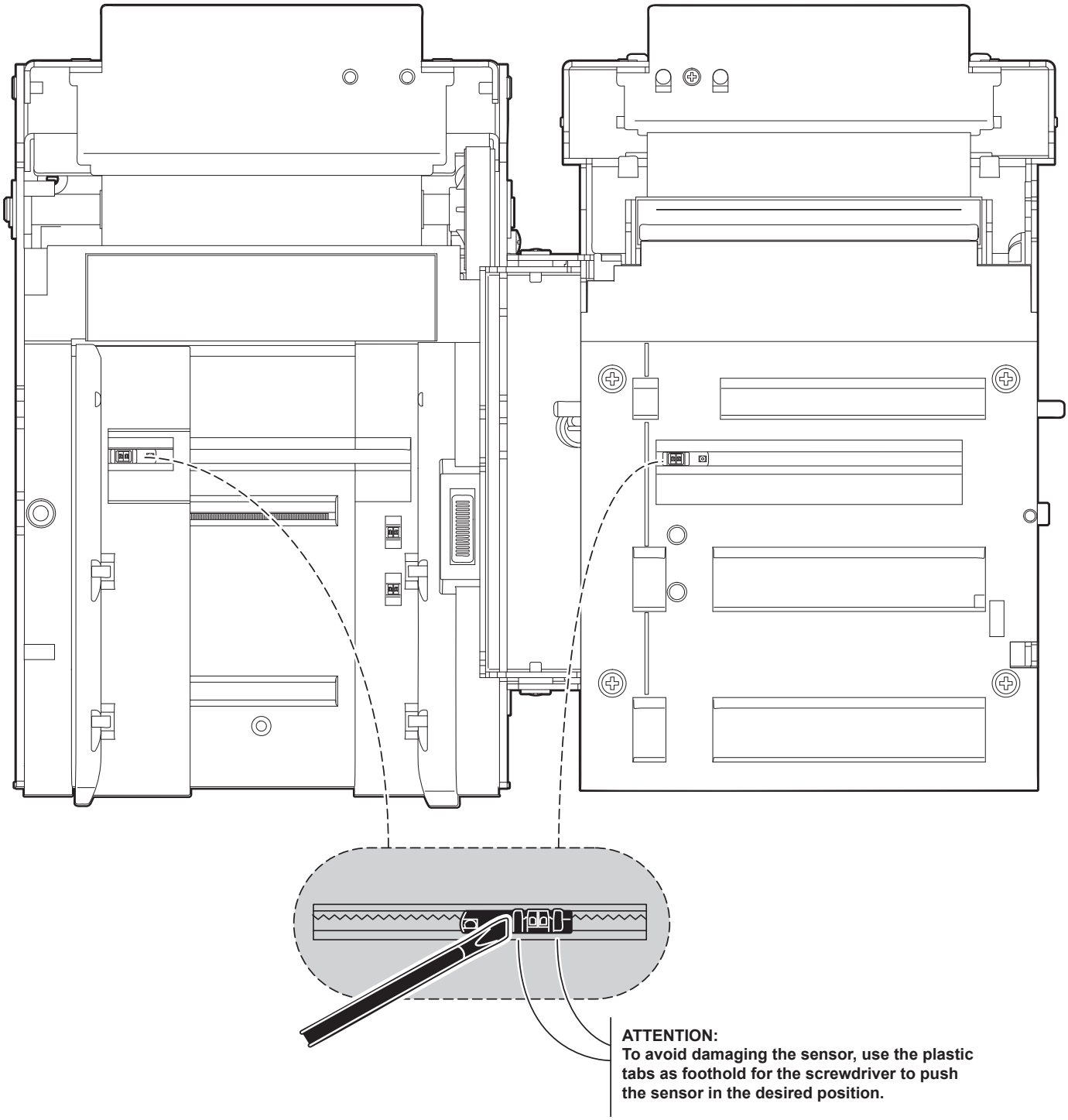
4.2 Adjusting the alignment sensors

The device is equipped with two mobile sensors for the detection of the alignment black mark placed both on the thermal side and on the non-thermal side of paper as shown in the following figure.
The device user will need to manually move these mobile sensors according to the position and the type of the black mark on the paper (see next paragraphs).
To use these sensors, you must set the “Notch/B.Mark Position” setup parameter on the correct value (see Chapter 5).



NOTE:
For ease of reference, for some models is represented only the internal printer group without the external plastic chassis.

To adjust the mobile sensors position according to the black mark position and type on paper, open the device cover (see par.4.4) and move the sensors to the desired position using a small screwdriver or a pointed object.



ATTENTION:
To avoid damaging the sensor, use the plastic tabs as foothold for the screwdriver to push the sensor in the desired position.

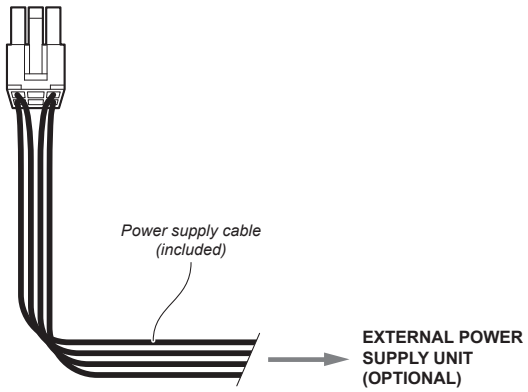
NOTES:
For ease of understanding, the image shows the two flats represented in the same plane.

For some models is represented only the internal printer group without the external plastic chassis.

4.3 Switch the device ON

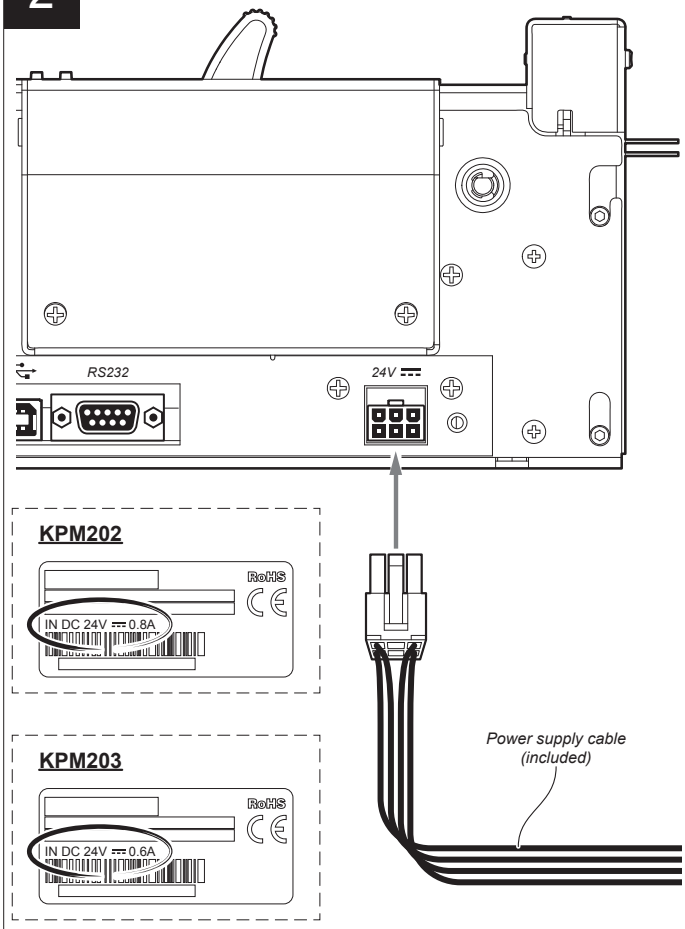
KPM202, KPM203

1



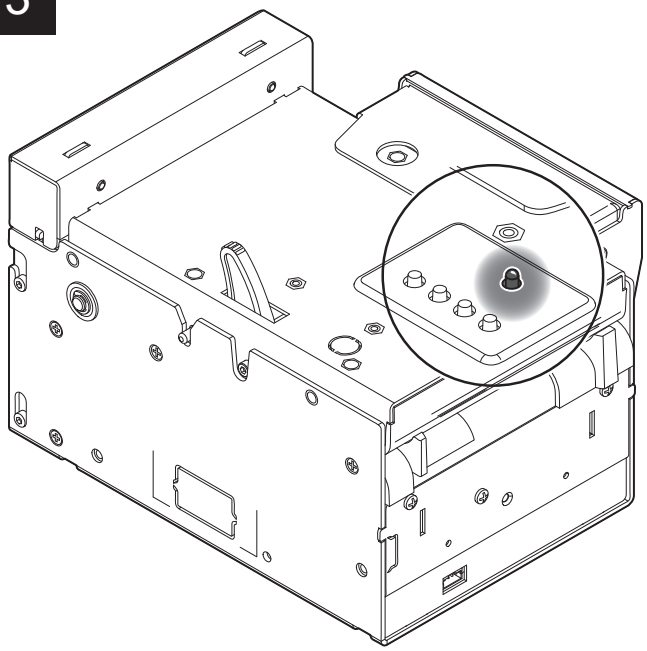
Connect the power supply cable
to an external power supply unit.

2



Connect the power supply cable to the device.
Use the type of electrical power supply
indicated on the label.

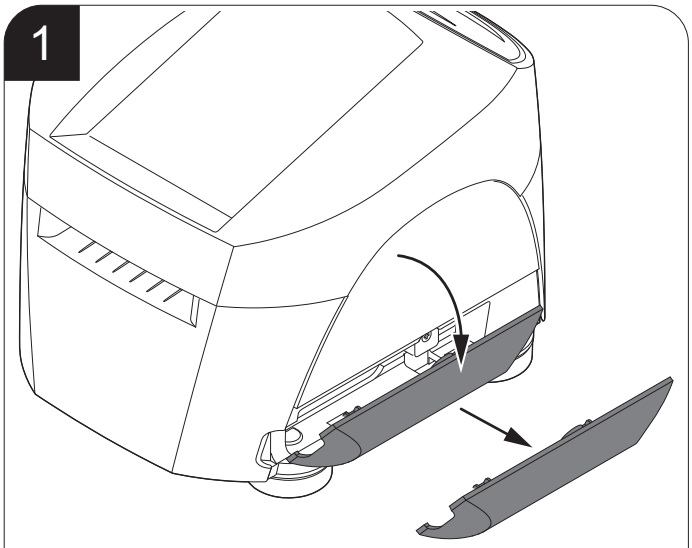
3



The green led turn on
and the device is ready.

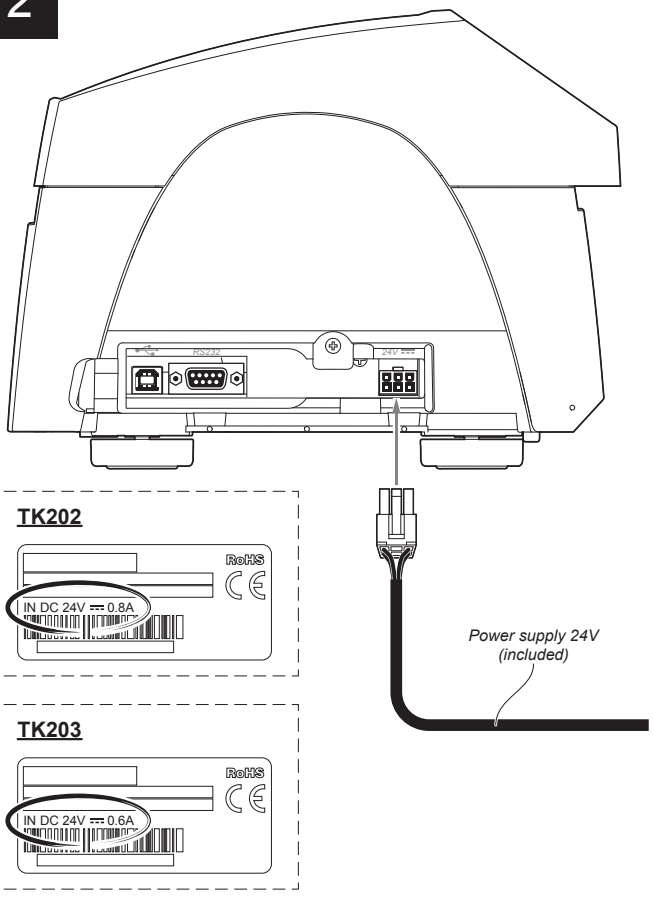
TK202, TK203

1



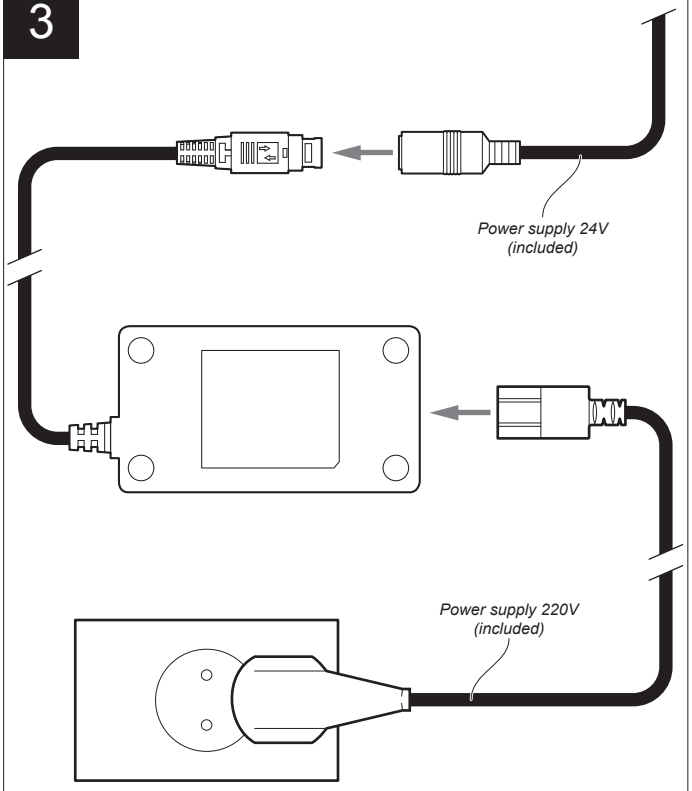
Remove the
connectors cover.

2



Connect the power supply 24V to the device.
Use the type of electrical power supply
indicated on the label.

3



Connect both the power supply cables
(24V and 220V) to the power supply and
connect the cable 220V to outlet.

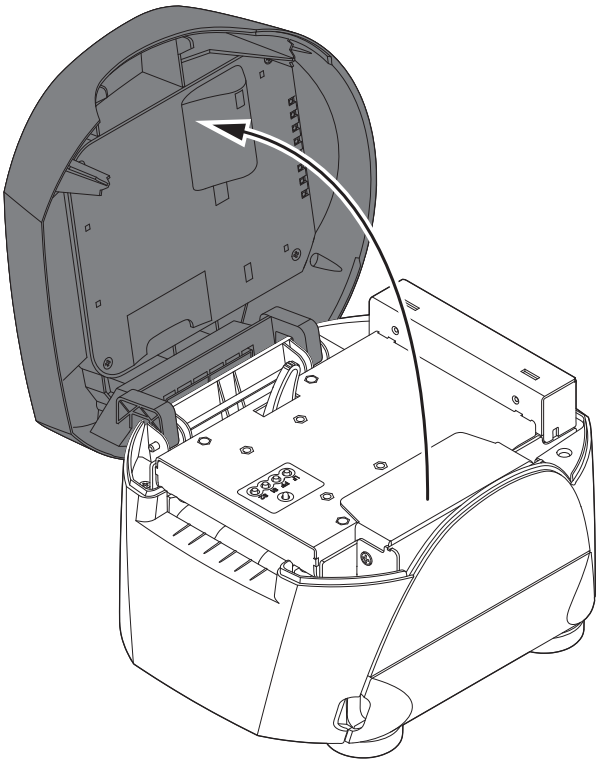
4

The display turns on with the standby message.
The device is ready.

4.4 Loading the paper roll

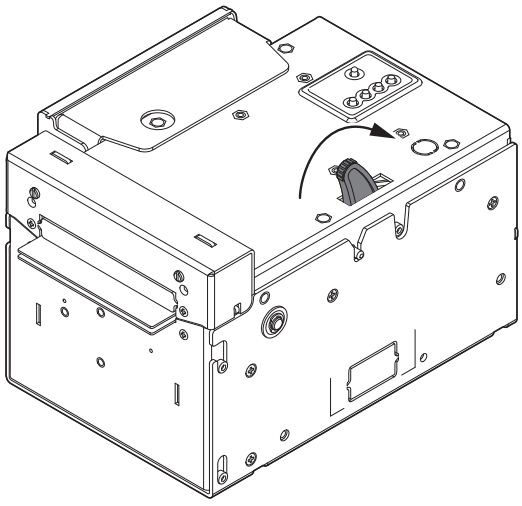
To change the paper proceed as follows. At every change of paper, check inside the device to locate and remove any scraps of paper.

1 **TK202, TK203**



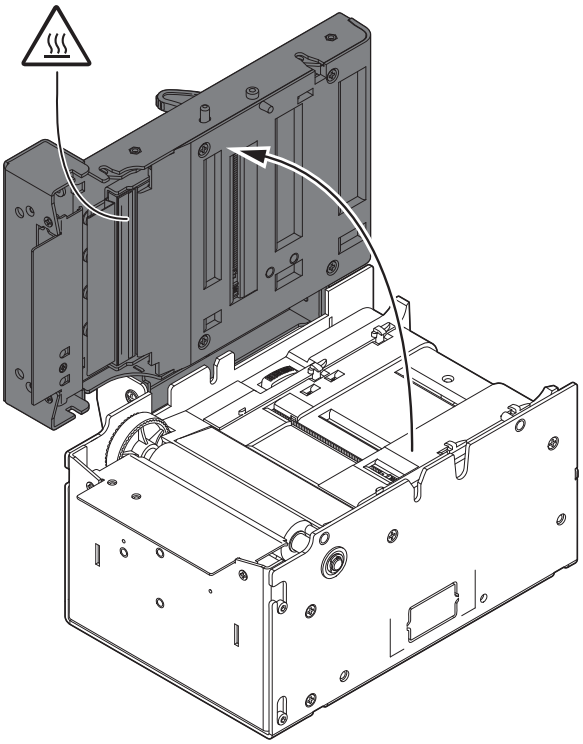
Open the
upper plastic cover.

2



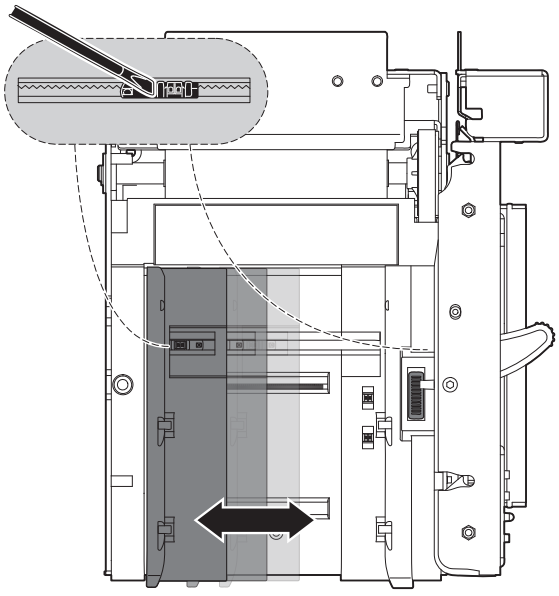
Push the opening lever
in the direction shown in the figure.

3



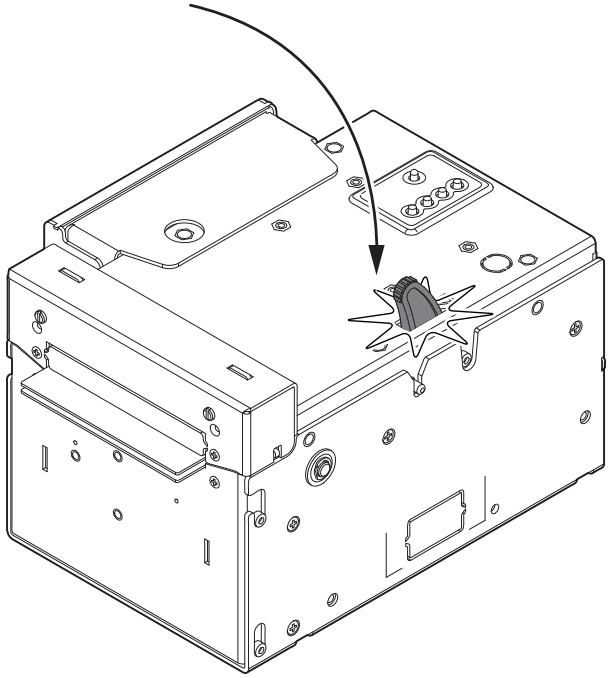
Open the upper cover
of the device.

4



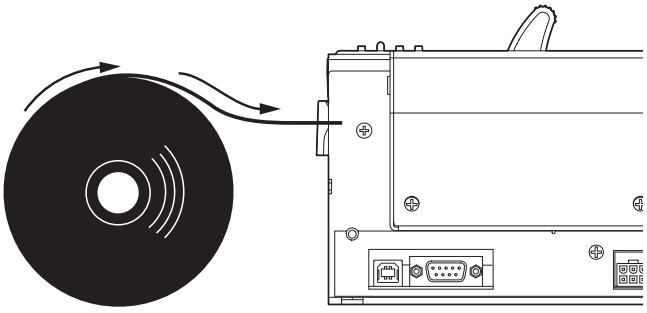
Adjust the paper width and the notch sensors
position (see previous paragraphs).

5



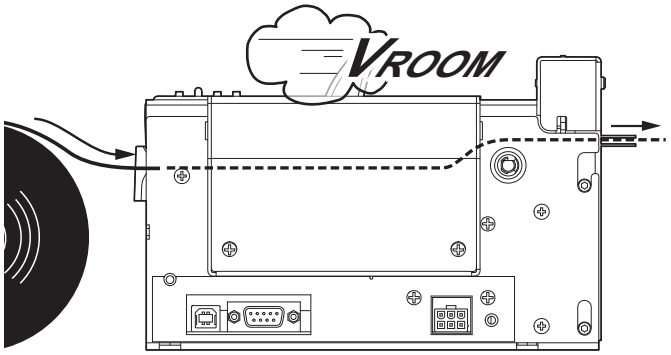
Close the upper cover
of the device.

6



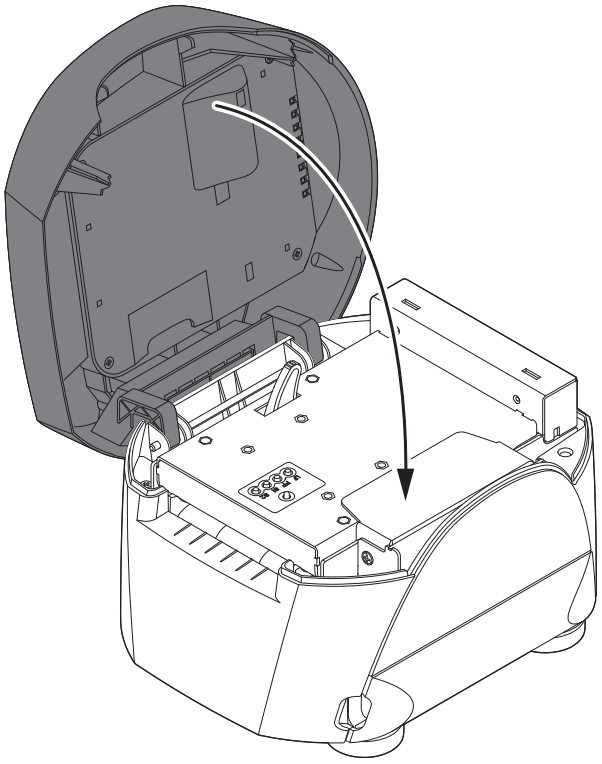
Insert the paper into the input mouth so that it unrolls
correctly. Be sure that the paper is
correctly positioned into paper guides.

7



Wait until the paper is
automatically loaded.

8 **TK202, TK203**



Close the
upper plastic cover.

NOTE:
For ease of reference, in some figure is represented only the internal printer without the external plastic chassis.

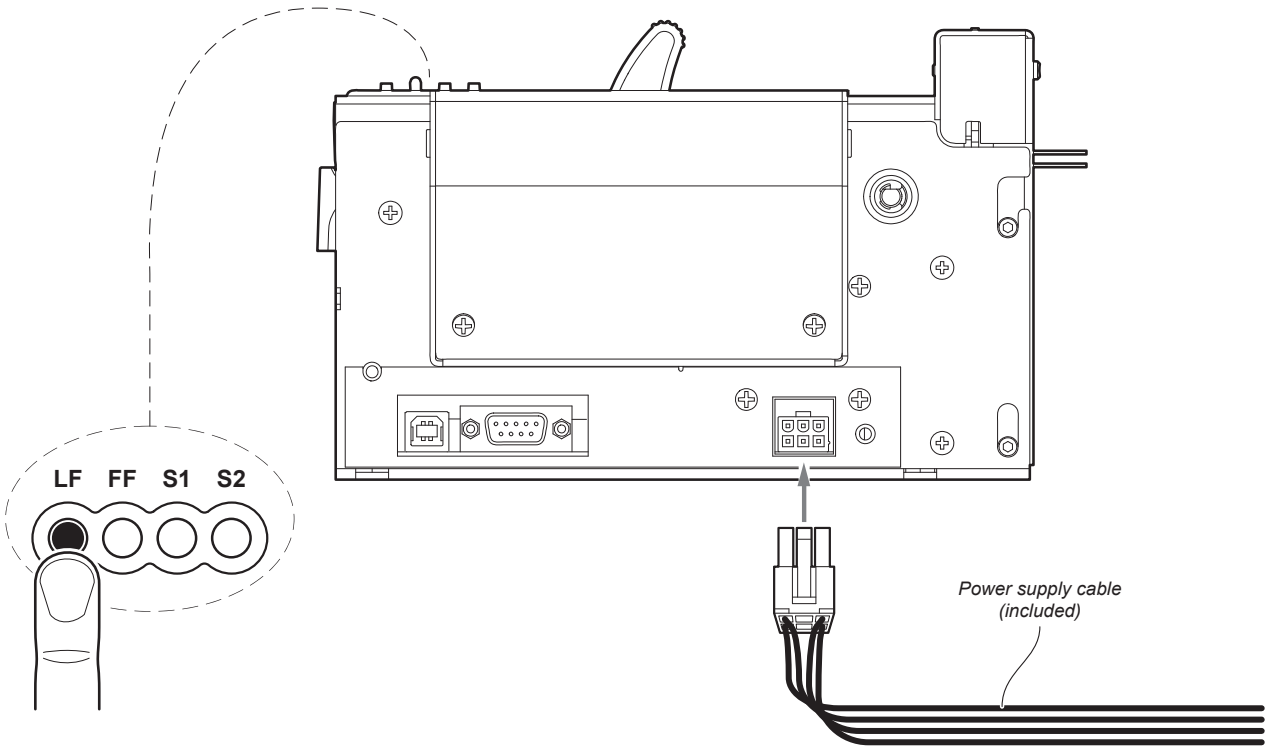
5 CONFIGURATION

5.1 Configuration mode

To enter the configuration mode and print a SETUP report with the operating parameters of the device, proceed as follows.

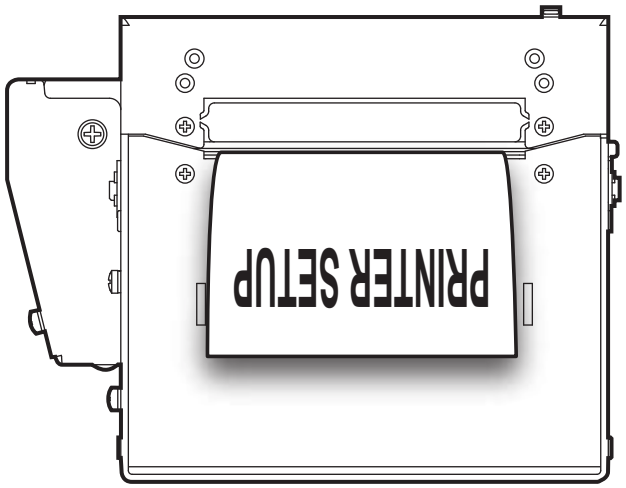
KPM202, KPM203

1



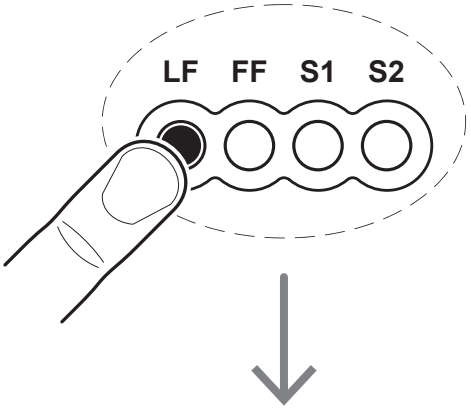
While pressing the LF LINE FEED key,
switch on the device by connecting the power supply cable.

2



The device prints the report with
the settings parameters.

3

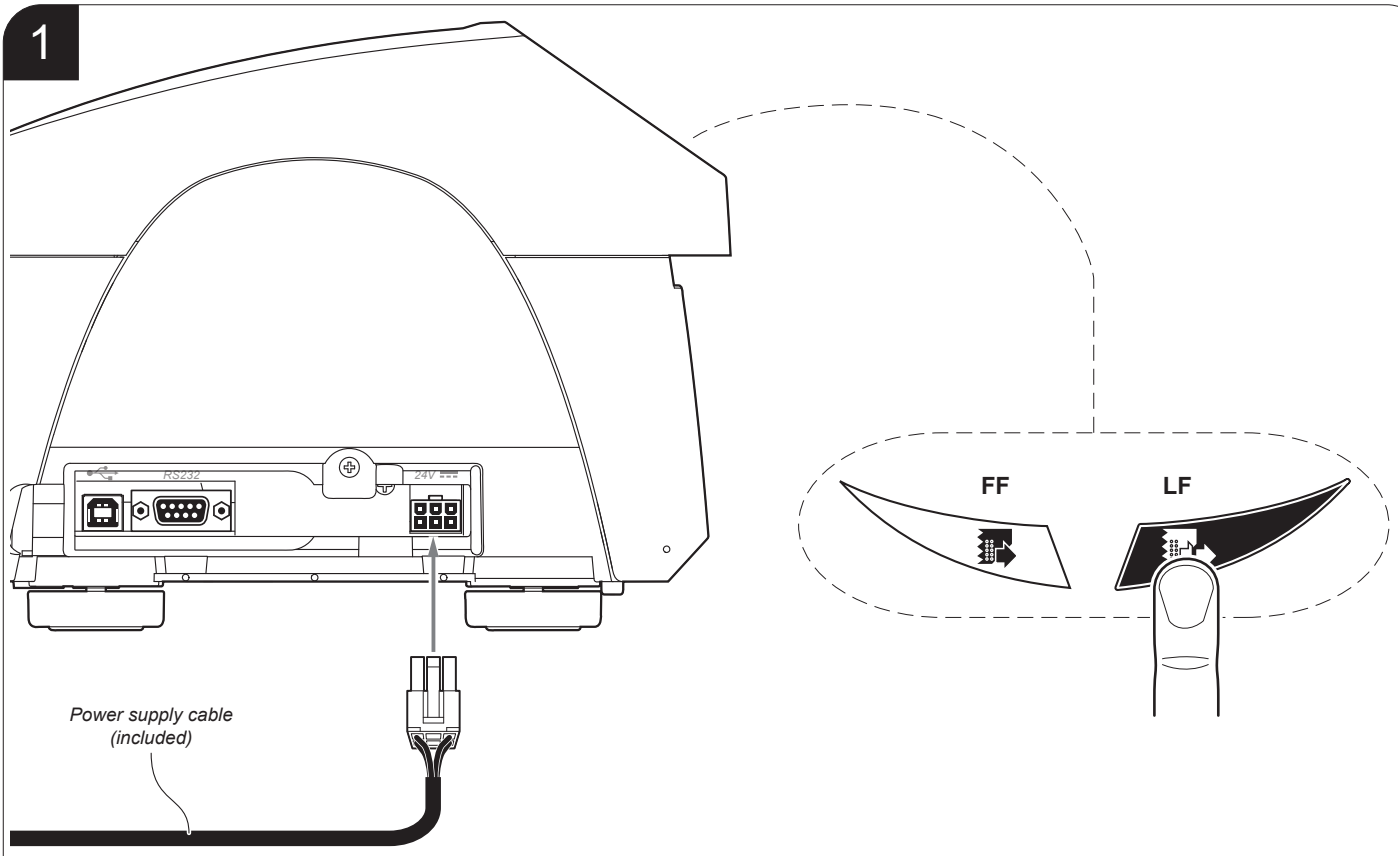


Enter printer setup

Press the LF LINE FEED key
to enter the configuration mode.

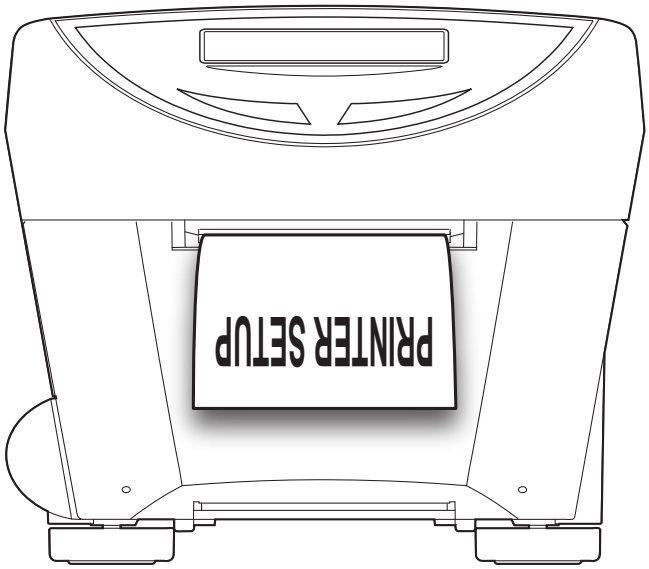
TK202, TK203

1



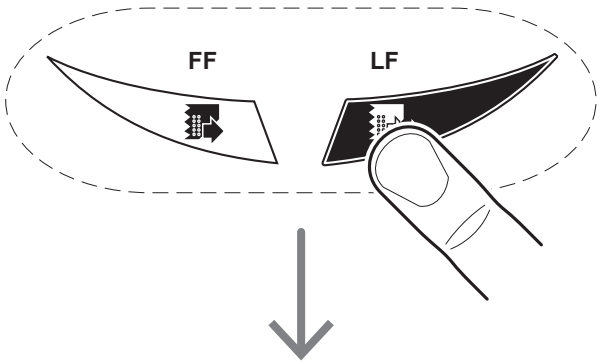
While pressing the LF LINE FEED key,
switch on the device by connecting the power supply cable.

2



The device prints the report with
the settings parameters.

3

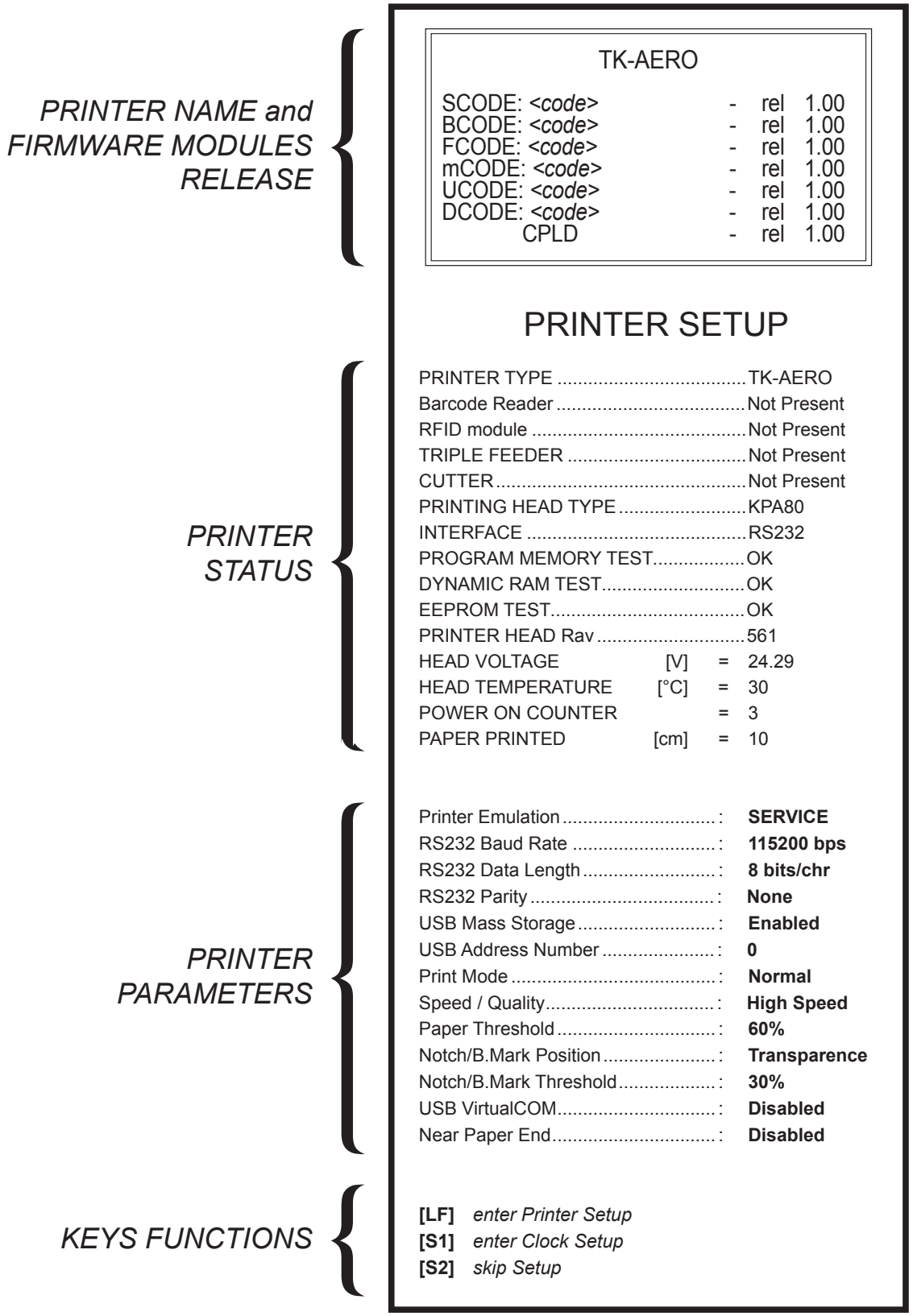


Enter printer setup

Press the LF LINE FEED key
to enter the configuration mode.

5.2 Setup report

The following figure shows the setup report of the device. The shown values for parameters are sample values; for the list and the description of device parameters see the following paragraphs.


PRINTER NAME and FIRMWARE MODULES RELEASE
PRINTER STATUS
PRINTER PARAMETERS
KEYS FUNCTIONS
TK-AERO
SCODE: <code> - rel 1.00
BCODE: <code> - rel 1.00
FCODE: <code> - rel 1.00
mCODE: <code> - rel 1.00
UCODE: <code> - rel 1.00
DCODE: <code> - rel 1.00
CPLD - rel 1.00
PRINTER SETUP
PRINTER TYPE ..... TK-AERO
Barcode Reader ..... Not Present
RFID module ..... Not Present
TRIPLE FEEDER ..... Not Present
CUTTER ..... Not Present
PRINTING HEAD TYPE KPA80
INTERFACE RS232
PROGRAM MEMORY TEST ..... OK
DYNAMIC RAM TEST ..... OK
EEPROM TEST ..... OK
PRINTER HEAD Rav 561
HEAD VOLTAGE [V] = 24.29
HEAD TEMPERATURE [°C] = 30
POWER ON COUNTER = 3
PAPER PRINTED [cm] = 10
Printer Emulation ..... : SERVICE
RS232 Baud Rate ..... : 115200 bps
RS232 Data Length ..... : 8 bits/chr
RS232 Parity ..... : None
USB Mass Storage ..... : Enabled
USB Address Number ..... : 0
Print Mode ..... : Normal
Speed / Quality ..... : High Speed
Paper Threshold ..... : 60%
Notch/B.Mark Position ..... : Transparence
Notch/B.Mark Threshold ..... : 30%
USB VirtualCOM ..... : Disabled
Near Paper End ..... : Disabled
[LF] enter Printer Setup
[S1] enter Clock Setup
[S2] skip Setup

5.3 Printer status

The device operating status is indicated in the configuration print-out in which, next to the name of the components displayed, the following information is given:

PRINTER TYPE	*device model*
Barcode Reader	*presence of the barcode reader*
RFID	*presence of the RFID reader/writer*
TRIPLE FEEDER	*presence of the triple feeder*
CUTTER	*presence of the cutter*
PRINTING HEAD TYPE	*print head model*
INTERFACE	*interface present*
PROGRAM MEMORY TEST	*OK appears if functioning and NOT OK if faulty*
DYNAMIC RAM TEST	*OK appears if functioning and NOT OK if faulty*
EEPROM TEST	*OK appears if functioning and NOT OK if faulty*
PRINTER HEAD Rav	*resistance of a dot head*
HEAD VOLTAGE	*voltage of the head*
HEAD TEMPERATURE	*temperature of the head*
POWER ON COUNTER	*number of power-ups made*
PAPER PRINTED	*centimetres of paper printed*

5.4 Printer parameters

These devices allow the configuration of the parameters listed in the following table.
The parameters marked with the symbol [D] are the default values.
Settings remain active even after the device has been turned off and they are stored in non-volatile memory.

PRINTER EMULATION

Available emulations for the device:

SERVICE [D] = used only for upgrade
BTP = used for management of baggages ticket
ATB = used for management of boarding ticket

RS232 BAUD RATE

Communication speed of the serial interface:

115200 [D]	*9600*
57600	*4800*
38400	*2400*
19200	*1200*

NOTE: Parameter valid only with serial interface.

RS232 DATA LENGTH

Number of bit used for characters encoding:

7 bits/car
8 bits/car [D]

NOTE: Parameter valid only with serial interface.

RS232 PARITY

Bit for the parity control of the serial interface:

None [D] = parity bit omitted
Even = even value for parity bit
Odd = odd value for parity bit

NOTE: Parameter valid only with serial interface.

USB MASS STORAGE

Sharing mode from Mass Storage:

Disabled = sharing mode disabled
Enabled [D] = sharing mode enabled

USB ADDRESS NUMBER

Numerical address code for the univocal identification of the USB device (in case of more than a USB device connected with the same PC):

0 [D]	*2*	*4*	*6*	*8*
1	*3*	*5*	*7*	*9*

PRINT MODE

Printing mode:

Normal [D] = enables printing in normal writing way
Reverse = enables printing rotated 180 degrees

SPEED / QUALITY

Setting of printing speed and printing quality:

High Quality
Normal
High Speed [D]

PAPER THRESHOLD

Threshold value (in percent) for the recognition of the presence of paper by the paper presence sensor:

30%	*60%* [D]	*90%*
40%	*70%*	
50%	*80%*	

NOTCH/B.MARK POSITION

Position of the alignment notch and choice of appropriate notch sensor:

Disabled =	*the notch alignment is not performed*
Top =	*the notch position is detected by the upper sensor (reflection)*
Bottom =	*the notch position is detected by the lower sensor (reflection)*
Transparent [D] *=*	*the notch is detected by the lower sensor and the upper sensor placed in front of (transparence)*

NOTCH/B.MARK THRESHOLD

Threshold value (in percent) for the recognition of the presence of notch by the notch sensor:

30%	*70%*
40%	*80%*
50%	*90%*
60% [D]	

NOTE: If the “Notch/B.Mark position” parameter is disabled, this parameter is not printed.

BARCODE ID 4

Setting of the barcode format associated with ID 4 (see AEA specifications):

Code128	=	*sets the Code128 format*
DataMatrix [D]	=	*sets the DataMatrix format*

NOTE:
This parameter is not printed on Setup Report, because it is not modifiable during the Setup procedure. To set this parameter, enter the Setup.ini file (see par.11.3).

VERTICAL SCALE [%]

Adjust of the printing positions by adding the percentage value to the coordinates of elements (in the direction of the length of the ticket).

NOTE:
This parameter is not printed on Setup Report, because it is not modifiable during the Setup procedure. To set this parameter, enter the Setup.ini file (see par.11.3).

PRESENTER OFFSET [mm]

Setting of the presentation distance of ticket in case of presentation mode enabled (paper cut disabled).

NOTE:
This parameter is not printed on Setup Report, because it is not modifiable during the Setup procedure. To set this parameter, enter the Setup.ini file (see par.11.3).

ALIGN TICKET

This parameter defines when the device must perform the automatic alignment of the ticket:

Disabled [D] = *alignment disabled*
Power On = *alignment at each power on*
Autoload = *alignment at each paper loading*
P.On/Load = *alignment both at power on and at paper loading*

NOTES:
At each alignment, device performs an ejection of the first inserted ticket in order to ensure the integrity of the first printed ticket.

This parameter is not printed on Setup Report, because it is not modifiable during the Setup procedure. To set this parameter, enter the Setup.ini file (see par.11.3).

RFID ENCODING

Setting of the coding system used for the writing of the RFID chip:

AEA standard [D]
Custom01

NOTE:
This parameter is not printed on Setup Report, because it is not modifiable during the Setup procedure. To set this parameter, enter the Setup.ini file (see par.11.3).

USB VIRTUAL COM

Setting of the USB port as a virtual serial port:

Disabled [D] = *virtual COM disabled*
Enabled = *virtual COM enabled*

ATB RePrint after ERR

This parameter enables/disables the automatic reprint of a ticket stopped due to a paper jam or a paper end

Disabled [D] = *reprint disabled*
Enabled = *reprint enabled*

NOTES:
This parameter is valid only with ATB emulation enabled.

This parameter is not printed on Setup Report, because it is not modifiable during the Setup procedure. To set this parameter, enter the Setup.ini file (see par.11.3).

NEAR PAPER END

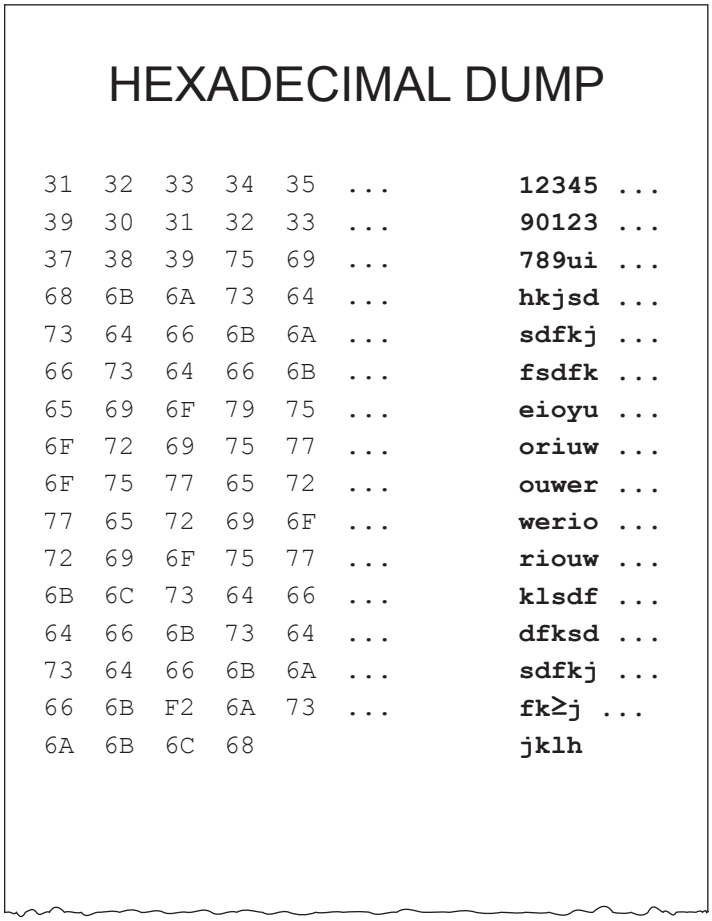
Setting of the near paper end detection:

Disabled [D] = *detection disabled*
Enabled = *detection enabled*

5.5 Hexadecimal dump

This function is used for the diagnosis of the characters received from the communications port. Characters are printed as hexadecimal code and the corresponding ASCII code (see below). Each line is preceded by a counter in hexadecimal that indicates the number of bytes received.

During the startup, if you hold down the FEED key, the device enters the self-test routine and print the setup report.
The device remains in standby until a key is pressed or characters are received through the communication port (Hexadecimal Dump mode). For each character sent, the ticket shows the hexadecimal value and the ASCII codes (if the characters are underlined, the receive buffer is full). Shown below is an example of a Hexadecimal Dump:



HEXADECIMAL DUMP

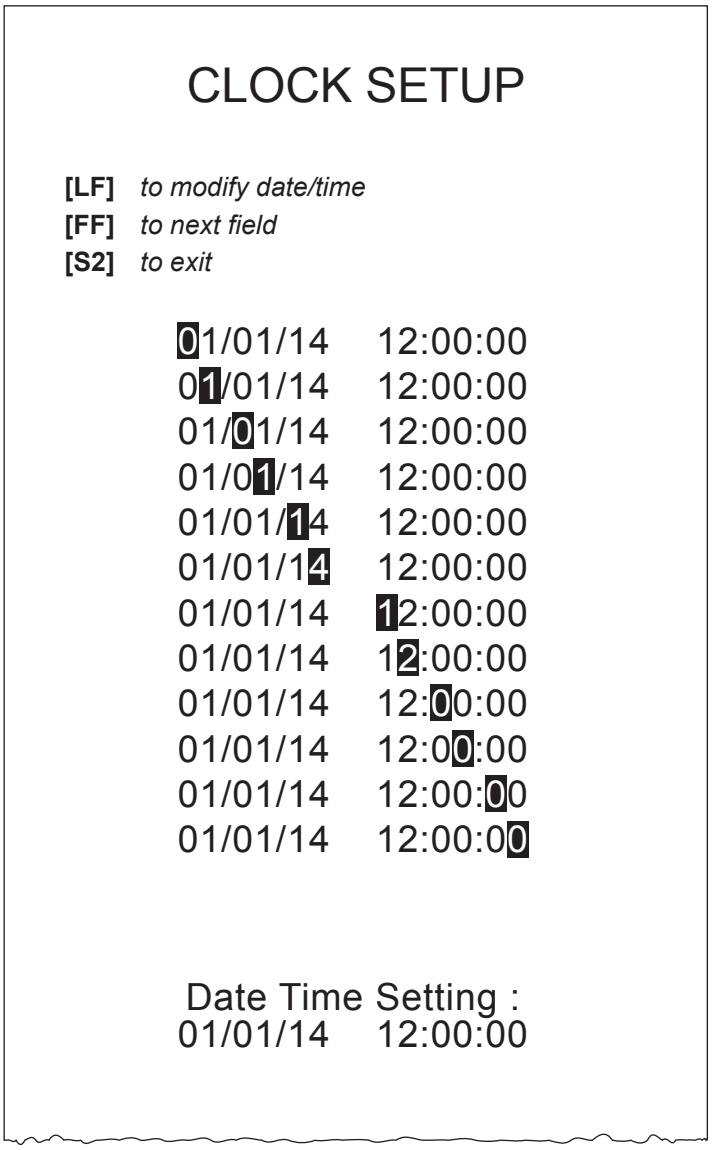
31	32	33	34	35	...	**12345 ...**
39	30	31	32	33	...	**90123 ...**
37	38	39	75	69	...	**789ui ...**
68	6B	6A	73	64	...	**hkjsd ...**
73	64	66	6B	6A	...	**sdfkj ...**
66	73	64	66	6B	...	**fsdfk ...**
65	69	6F	79	75	...	**eioyu ...**
6F	72	69	75	77	...	**oriuw ...**
6F	75	77	65	72	...	**ouwer ...**
77	65	72	69	6F	...	**werio ...**
72	69	6F	75	77	...	**riouw ...**
6B	6C	73	64	66	...	**klsdf ...**
64	66	6B	73	64	...	**dfksd ...**
73	64	66	6B	6A	...	**sdfkj ...**
66	6B	F2	6A	73	...	**fk≥j ...**
6A	6B	6C	68			**jklh**

5.6 Calendar clock

The devices are equipped with a Real Time Clock. During power-up, held down the LF LINE FEED key to enter in the device configuration mode. Press the S1 key to enter in the clock configuration (see following figure).
Press the LF LINE FEED key to modify date/time; the device will print the updated date and time.

Follow the instructions printed on the paper for the key functionality. The highlighted digit (the number is written in negative mode) indicates the digit to be modified. Press the LF LINE FEED key to modify the value of the highlighted digit; every single LF LINE FEED key pressure increases of 1 his value. Once the value 9 is reached the counting starts again from 0.

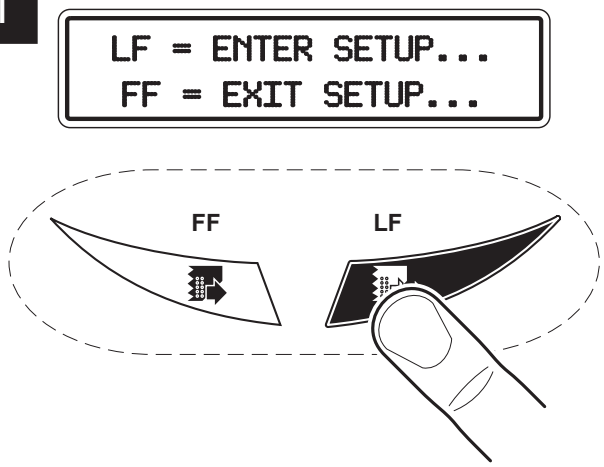
Press the FF FORM FEED key to move the cursor on the next digit; if the cursor position is on the latest digit you can proceed to next parameter by pressing the FF FORM FEED key again.
Press the S2 key to exit and terminate the setting procedure.



TK202, TK203

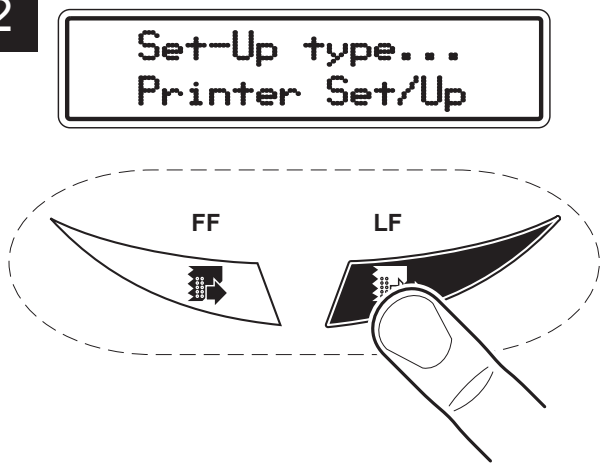
The devices are equipped with a Real Time Clock. Proceed as follows to perform the clock configuration.

1



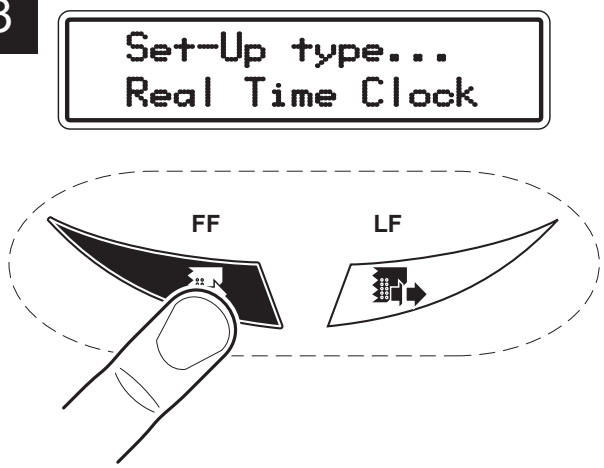
During power-up, press the LF LINE FEED key
to enter the setup configuration.

2



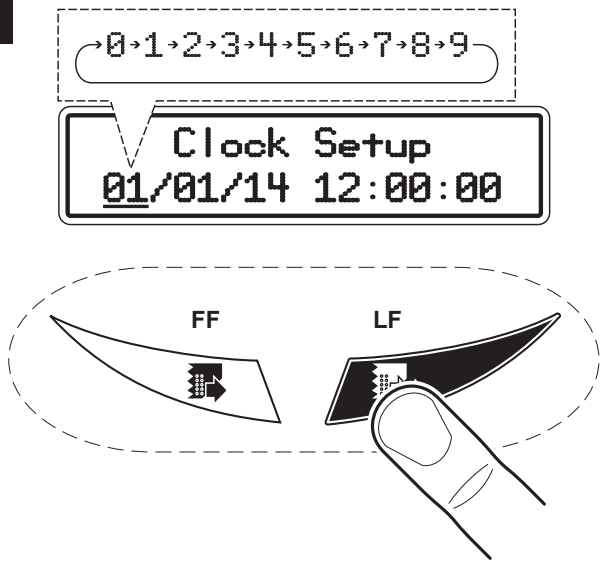
Press the LF LINE FEED key
to select the Real Time Clock settings.

3



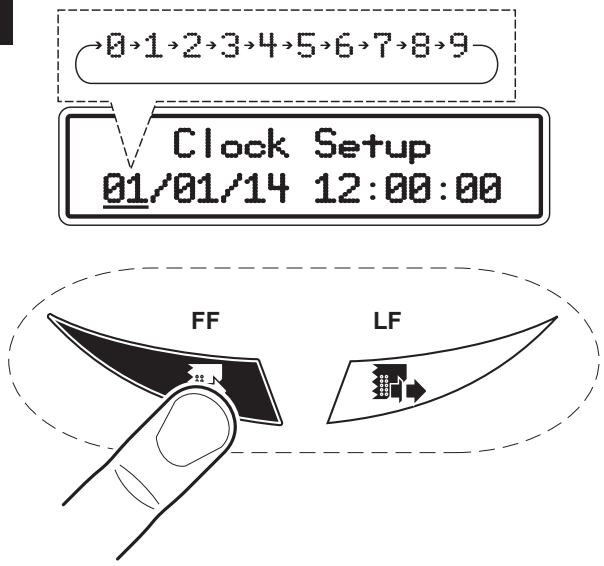
Press the FF FORM FEED key to confirm the selection.
The date/time values will be displayed.
Follow the instructions printed on the paper.

4



The digit to be modified is highlighted.
Press the LF LINE FEED key to modify the value;
every press on the button increases the value by one.
Once the max selectionable value is reached the
counting starts again from 0.

5

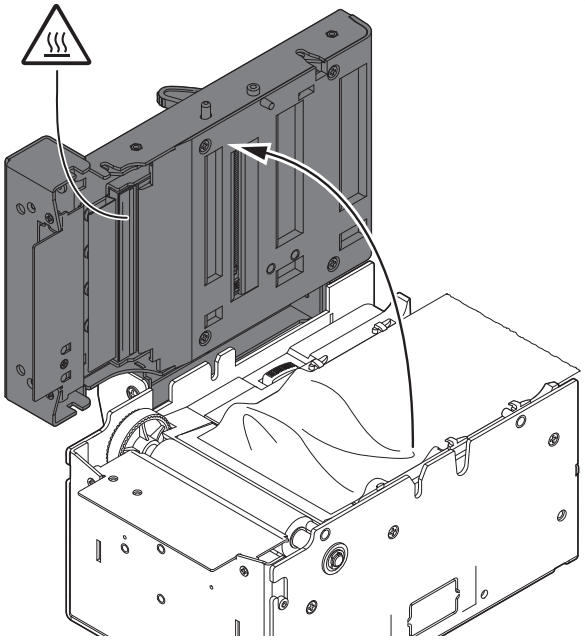


Use the FF FORM FEED key to move the cursor
on the next digit; if the cursor position is
on the latest digit, press the FF FORM FEED key
to exit and save the date/time entered.
Then the device is ready.

6 MAINTENANCE

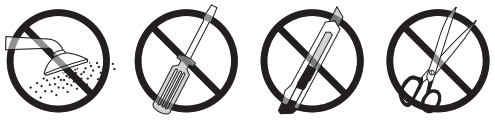
6.1 Printer paper jam

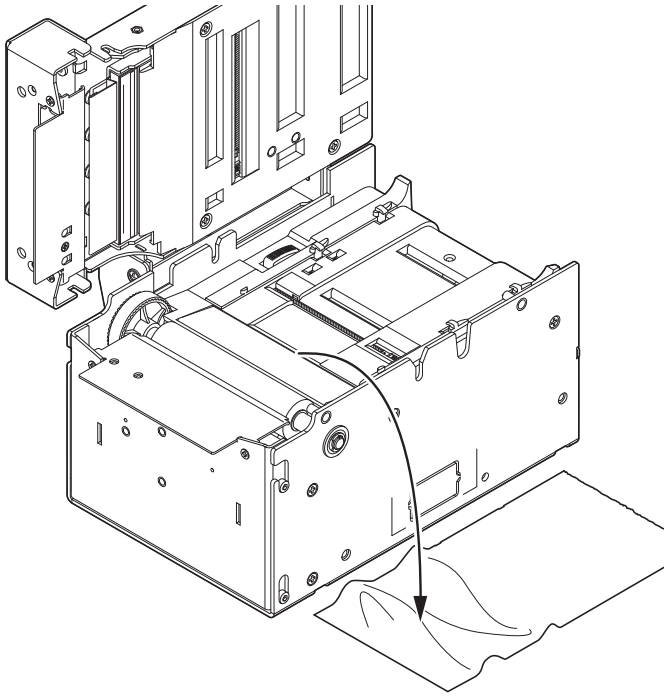
1



Open the upper covers of the device
(see previous paragraphs).

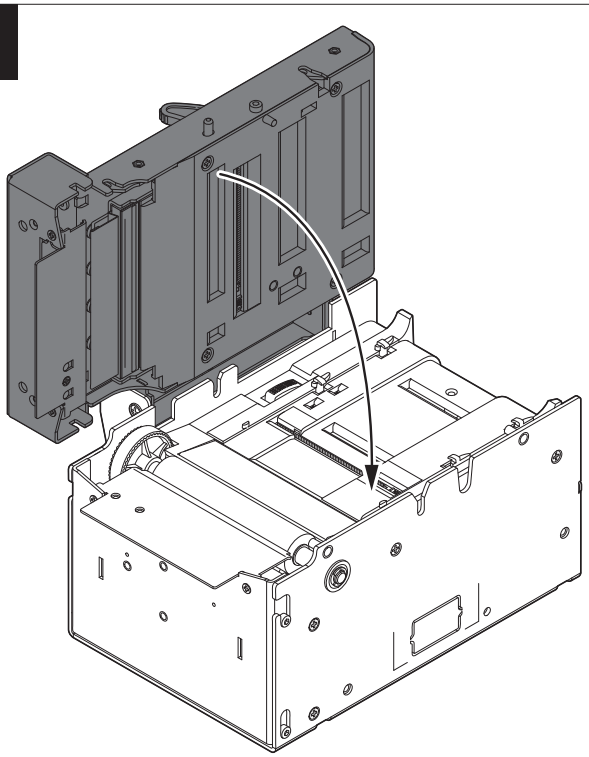
2





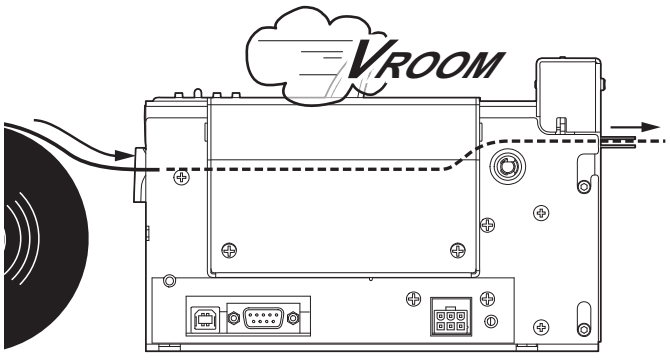
Remove the damaged paper and check the presence for paper scraps inside the device. Carefully remove all paper scraps. If necessary use tweezers.

3



Close the upper covers of the device
(see previous paragraphs).

4



Insert the paper
(see previous paragraphs).

NOTE:
For ease of reference, in some figure is represented only the internal printer without the external plastic chassis.

6.2 Planning of cleaning operations

The regular cleaning of the device keeps the print quality and extends its life. The following table shows the recommended planning for the cleaning operations.

EVERY PAPER CHANGE	
Printing head	Use isopropyl alcohol
Printing roll	Use isopropyl alcohol
EVERY 5 PAPER CHANGES	
Paper path	Use compressed air or tweezers
Sensors	Use compressed air
EVERY 6 MONTHS OR AS NEEDED	
Case	Use compressed air or a soft cloth
Display	Use a soft cloth (1)

For specific procedures, see the following pages.

NOTES:
If you use the device in dusty environments, you must reduce the intervals between the cleaning operations.

For ease of reference, in the following pages, for some models is represented only the printer group without the external plastic chassis.

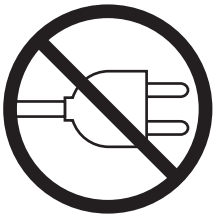
(1) Don't use any ammonia-based product (only for TK202, TK203)

6.3 Cleaning

For periodic cleaning of the device, see the instructions below

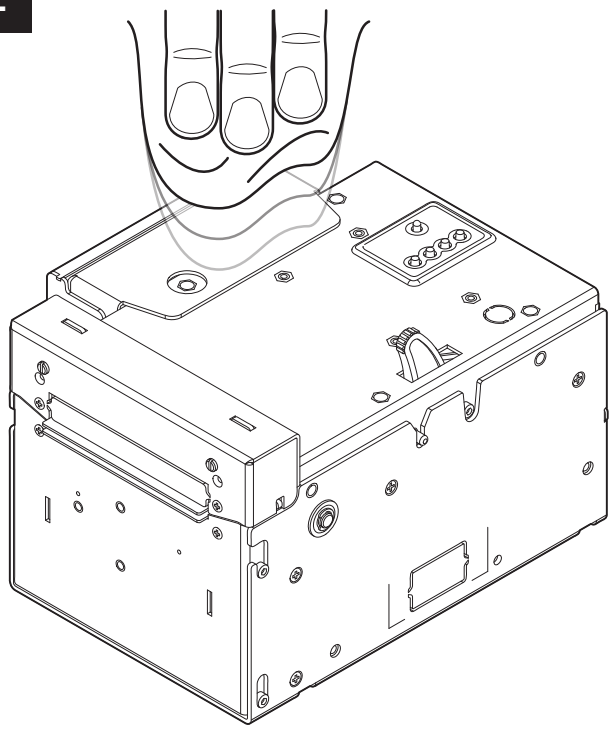
Case

1



Disconnect the power supply cable.

2

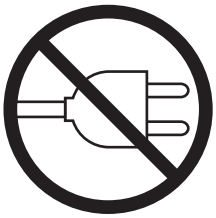


ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the machine.

To clean the device,
use compressed air or a soft cloth.

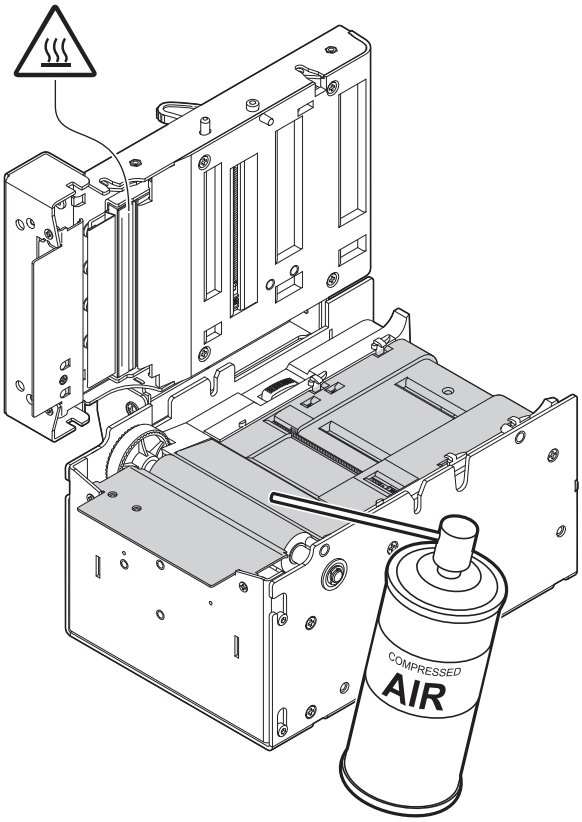
Paper path

1



Disconnect the power supply cable and open the upper device covers (see previous paragraphs).

2

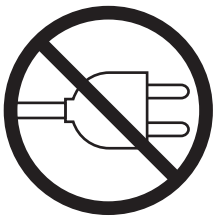


ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the machine.
To remove paper scraps, use tweezers or compressed air.

Clean the area involved in the passage of paper
by using compressed air.

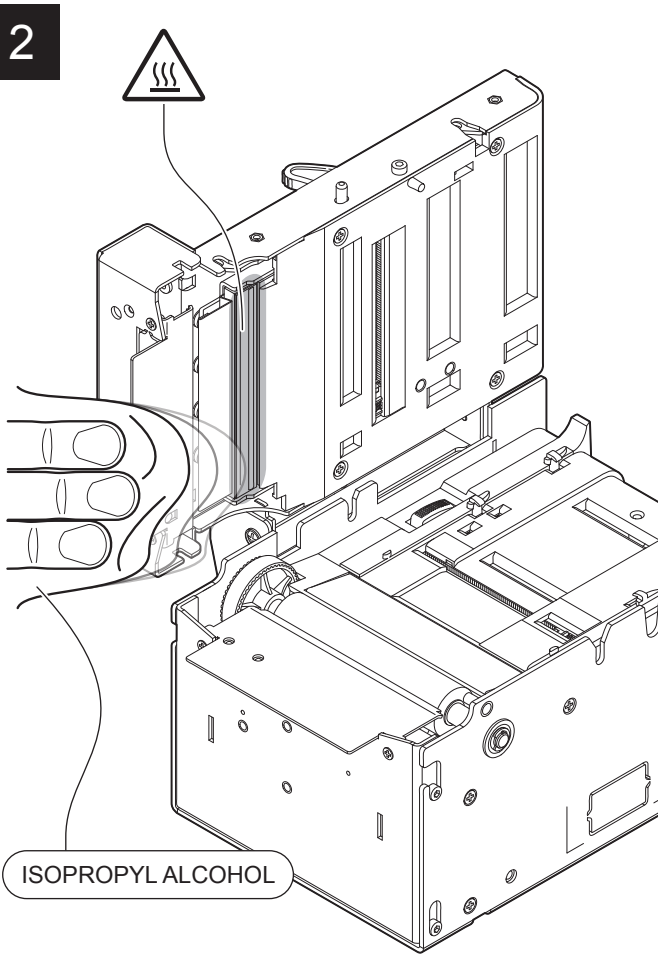
Printing head

1



Disconnect the power supply cable and open the upper device covers (see previous paragraphs).

2

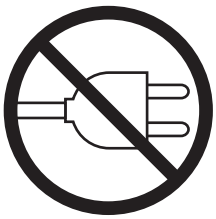


ATTENTION:
Do not use solvents, or hard brushes.
Do not let water or other liquids get inside the machine.
To remove paper scraps, use tweezers or compressed air.

Clean the printing head by using
a non-abrasive cloth moistened with isopropyl.

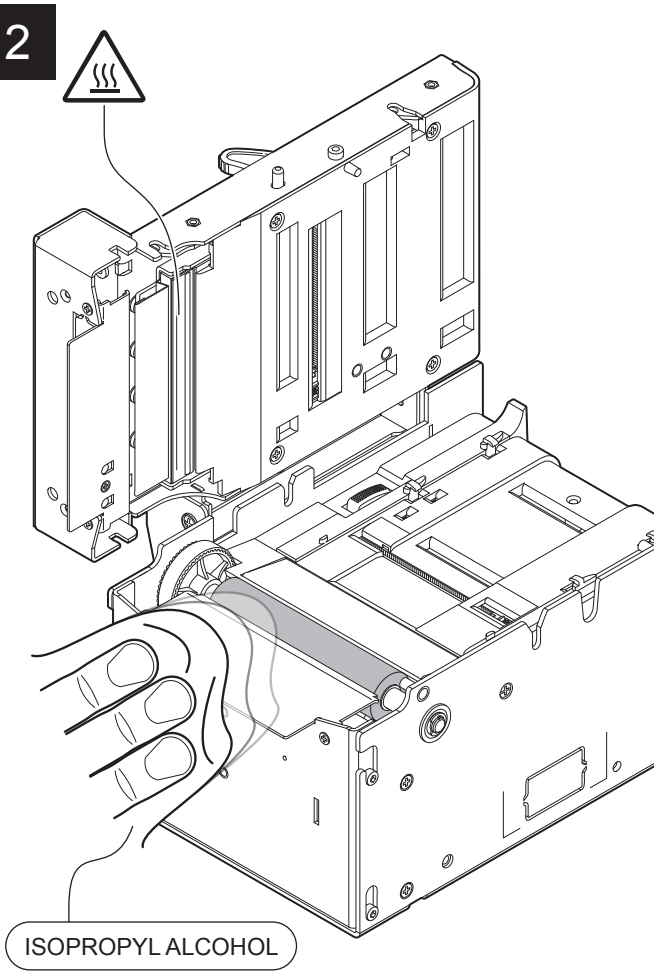
Printing roller

1



Disconnect the power supply cable and open the upper device covers (see previous paragraphs).

2

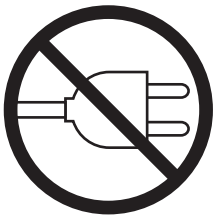


ATTENTION:
Do not use solvents, or hard brushes.
Do not let water or other liquids get inside the machine.
To remove paper scraps, use tweezers or compressed air.

Clean the printing roll by using
a non-abrasive cloth moistened with isopropyl.

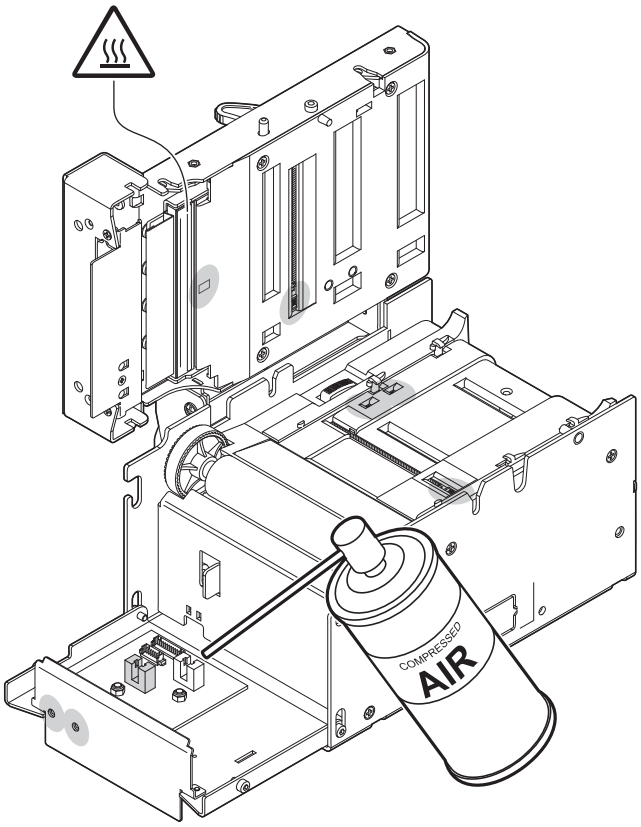
Sensors

1



Disconnect the power supply cable and open the upper device covers (see previous paragraphs).

2

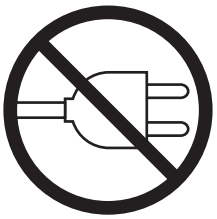


ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the machine.
To remove paper scraps, use tweezers or compressed air.

Clean all the device sensors
by using compressed air.

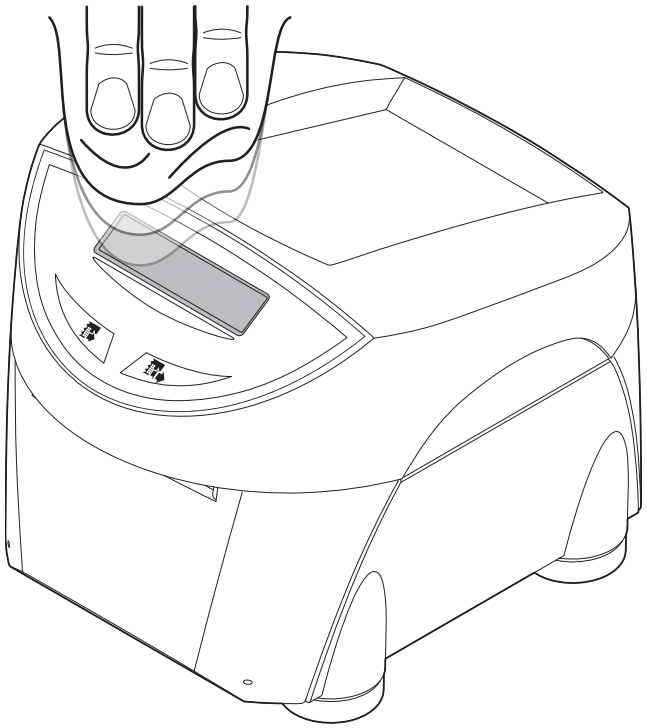
Display

1



Disconnect the power supply cable.

2



ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the machine.
Do not use ammonia-based products .

To clean the display,
use compressed air or a soft cloth.

6.4 Upgrade firmware

WARNING:

Before proceeding with the upgrade procedure, set the “Service” value for the “Emulation” parameter (see chapter 5).

During communication between PC and device for the firmware update it is strictly forbidden to disconnect the communication cable or to remove the power supply of the devices not to endanger the proper functioning of the machine.

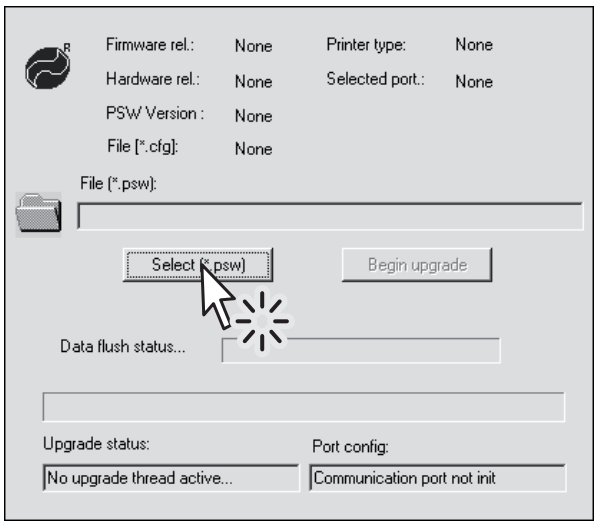
NOTES:
The latest firmware of the device is available in the download area of the web site www.custom.biz

Install on the PC used for device upgrading the UP-GCEAERO software available in the download area of the web site www.custom.biz.

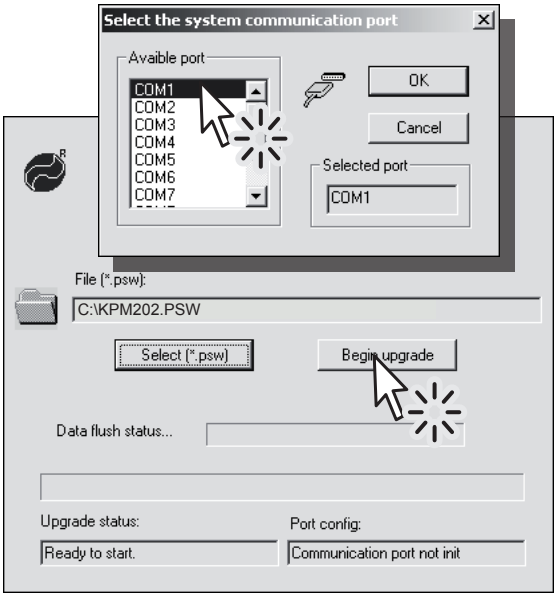
Update via serial interface

Proceed as follows:

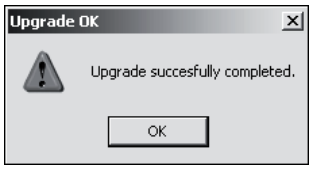
1. Write down the product code (14 digits) printed on the product label (see par.2.5).
2. Go to the web site www.custom.biz and download the appropriate firmware release from the DOWNLOAD area.
3. Print the SETUP report (see chapter 5).
4. Switch OFF the device.
5. Connect the device to the PC using a serial cable (see paragraph 3.3).
6. Switch ON the device.
7. Launch the software UPGCEAERO.
8. Select the update file .PSW location:



9. Select the serial communication port (e.g. COM1):



10. Detecting and setting of the parameters necessary for serial communication are performed automatically and then updating begins.
11. After a few minutes a message on the screen warns that the update is completed.



12. Print a new SETUP report to verify the new firmware release (see chapter 5).

Update via USB interface

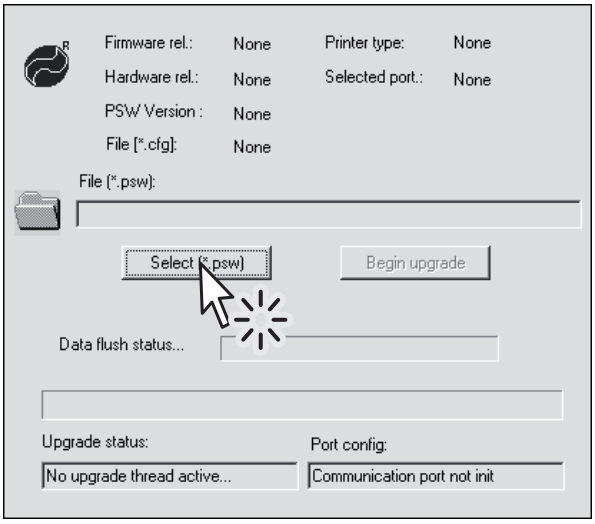
ATTENTION:
Only during the firmware update, the connection between PC and device must be direct, without the use of HUB device.

Only during the firmware update, do not connect or disconnect other USB devices.

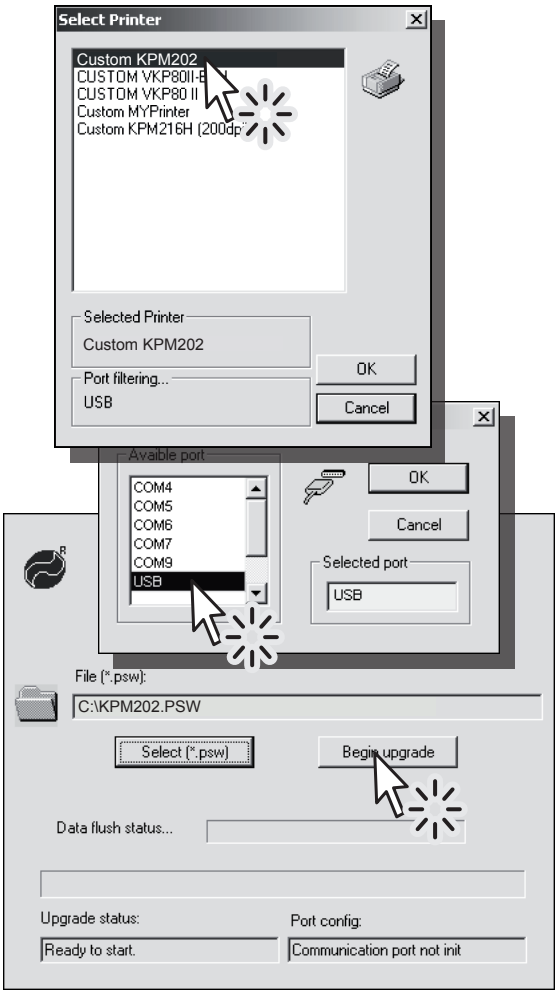
NOTE: For communication via USB you must install on PC the device driver available in the download area of the web site www.custom.biz.

Proceed as follows:

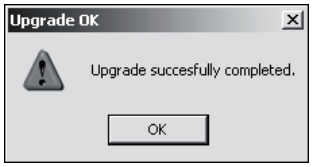
1. Write down the product code (14 digits) printed on the product label (see par.2.5).
2. Go to the web site www.custom.biz and download the appropriate firmware release from the DOWNLOAD area.
3. Print the SETUP report (see chapter 5).
4. Switch OFF the device.
5. Connect the device to the PC using a USB cable (see paragraph 3.3).
6. Switch ON the device.
7. Launch the software UPGCEAERO.
8. Select the update file .PSW location:



9. Select item USB and then select the USB device among those proposed (e.g. KPM202):



10. After a few minutes a message on the screen warns that the update is completed.



11. Print a new SETUP report to verify the new firmware release (see chapter 5).

7 SPECIFICATION

7.1 Hardware specifications

GENERAL	
Sensors	Ticket presence, head temperature, mobile detectors of black mark or translucent gap/hole (setting by software), ticket presence on output, frontal and upper cover open, external near paper end,
MTBF (1)	84 080 hours
Emulations	SERVICE, ATB, BTP
INTERFACES	
USB port	12 Mbit/sec
RS232 serial port	from 1200 to 115200 bps
MEMORIES	
Receive buffer	64 Kbytes
Flash memory	16 Mbytes
PRINTER	
Resolution	
KPM202, TK202	203 dpi (8 dot/mm)
KPM203, TK203	304 dpi (12 dot/mm)
Printing method	Thermal, fixed head
Head life (2)	50 Km / 100M pulses
Printable barcode	UPCA, UPCE, EAN13, EAN8, CODE39, ITF, CODABAR, CODE93, CODE128, CODE32, PDF417, DATAMATRIX, AZTEC, QRCODE

Printing speed [2] [3]	
KPM202, TK202	High quality = 110 mm/sec Normal = 170 mm/sec High speed = 200 mm/sec
KPM203, TK203	High quality = 100 mm/sec Normal = 125 mm/sec High speed = 150 mm/sec
PAPER	
Type of paper	
KPM202, KPM203	Thermal rolls, heat-sensitive side on outside of roll Thermal fanfold module
TK202, TK203	Thermal fanfold module
Paper width	54mm (according to IATA BTP specifications - resolution 740) 82.5mm (according to IATA ATB specifications - resolution 722e)
Paper weight	according to IATA specifications
Paper thickness	according to IATA specifications
External roll diameter [4]	max. 300 mm
Internal roll core diameter	25 mm (+ 1mm)
Core thickness	2 mm (+1 mm)
Core type	Cardboard or plastic
Paper end	Not attached to roll core
DEVICES ELECTRICAL SPECIFICATIONS	
Power supply	24 Vdc ±10%
Medium consumption [3]	
KPM202, TK202	0.8 A
KPM203, TK203	0.6 A
Stand-by consumption	0.14 A

POWER SUPPLY ELECTRICAL SPECIFICATIONS cod.963GE020000004 (OPTIONAL for *KPM202, KPM203, INCLUDED for TK202, TK203)*)	
Power supply voltage	Auto Range, 90-132 VAC & 190-264 VAC
Frequency	from 47 Hz to 63 Hz
Current (output)	4.17 A
Power	100 W
ENVIRONMENTAL CONDITIONS	
Operating temperature	from 0°C to 50°C
Relative humidity	
KPM202, KPM203	from 10% Rh to 80% Rh
TK202, TK203	from 10% Rh to 85% Rh
Storage temperature	from -20 °C to +70 °C
Storage relative humidity	from 10% Rh to 90% Rh

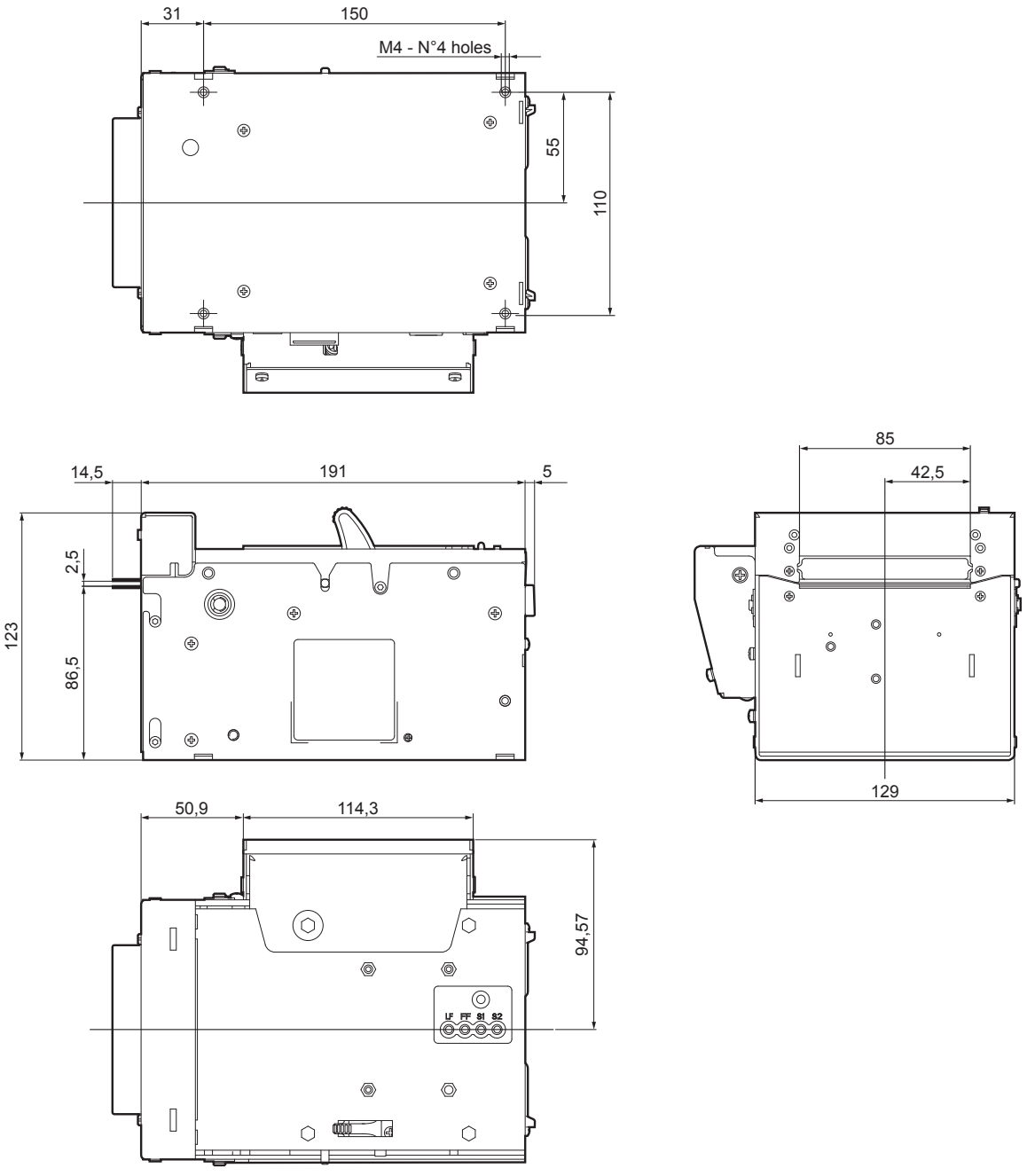
NOTES:
(1) : Control board.
(2) : Respecting the regular schedule of cleaning for the device components.
(3) : Referred to a standard CUSTOM receipt (L=10cm, Density = 12,5% dots on).
(4) : For external rolls diameter higher to Ø100mm it's recommended to use a paper pretensioning device.

7.2 Device dimensions

KPM202, KPM203

Length	191 mm
Height	123 mm
Width	160 mm
Weight	3500 g

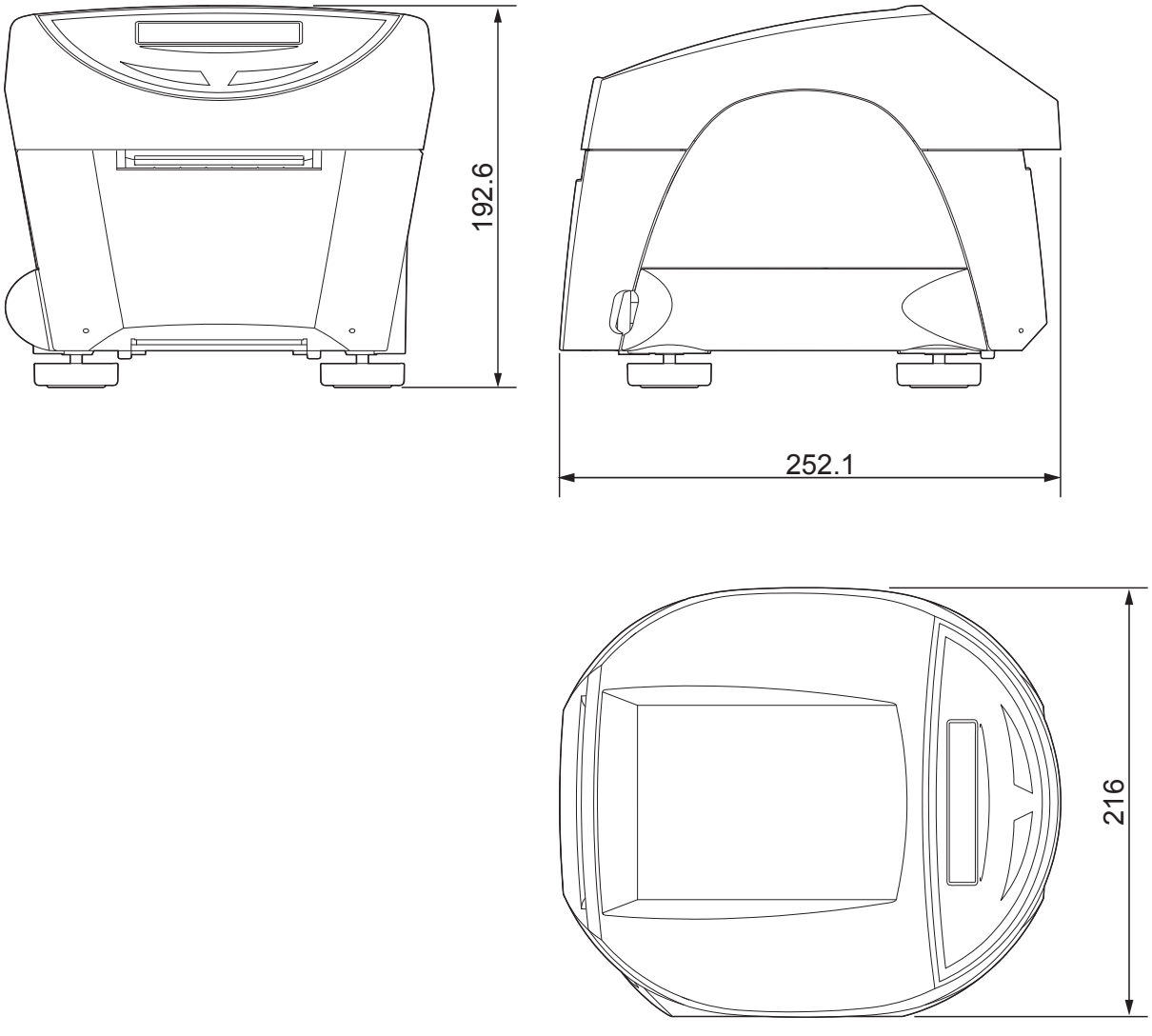
NOTE: All the dimensions shown in the following figure are in millimetres and referred to devices with covers closed.



TK202, TK203

Length	252.1 mm
Height	192.6 mm
Width	216 mm
Weight	4000 g

NOTE: All the dimensions shown in the following figure are in millimetres and referred to devices with covers closed and without paper roll.

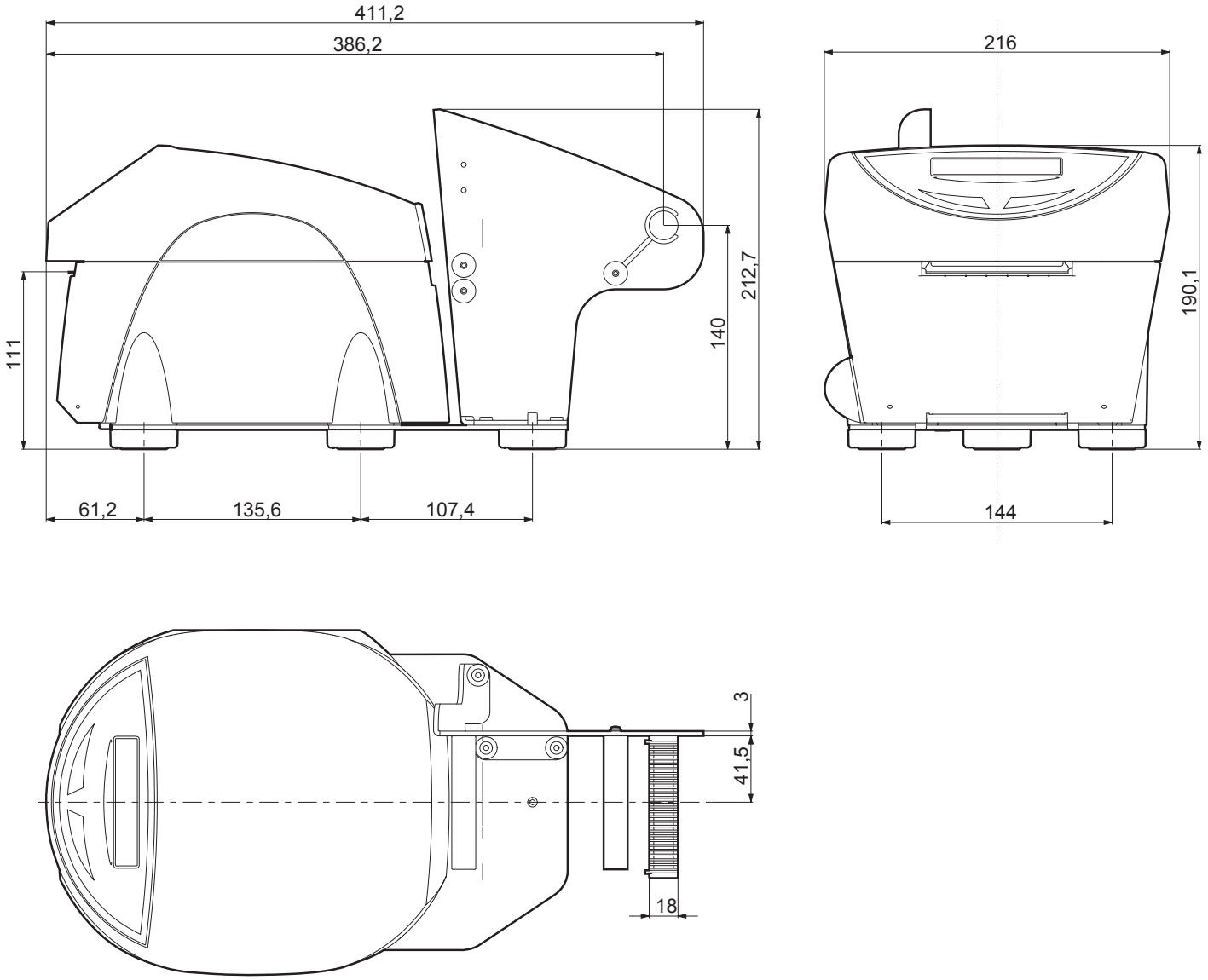


7.3 Device dimensions with paper roll holder

TK202, TK203

Length	411.2 mm
Height	212.7 mm
Width	216 mm

NOTE: All the dimensions shown in the following figure are in millimetres and referred to devices with covers closed and without paper roll.

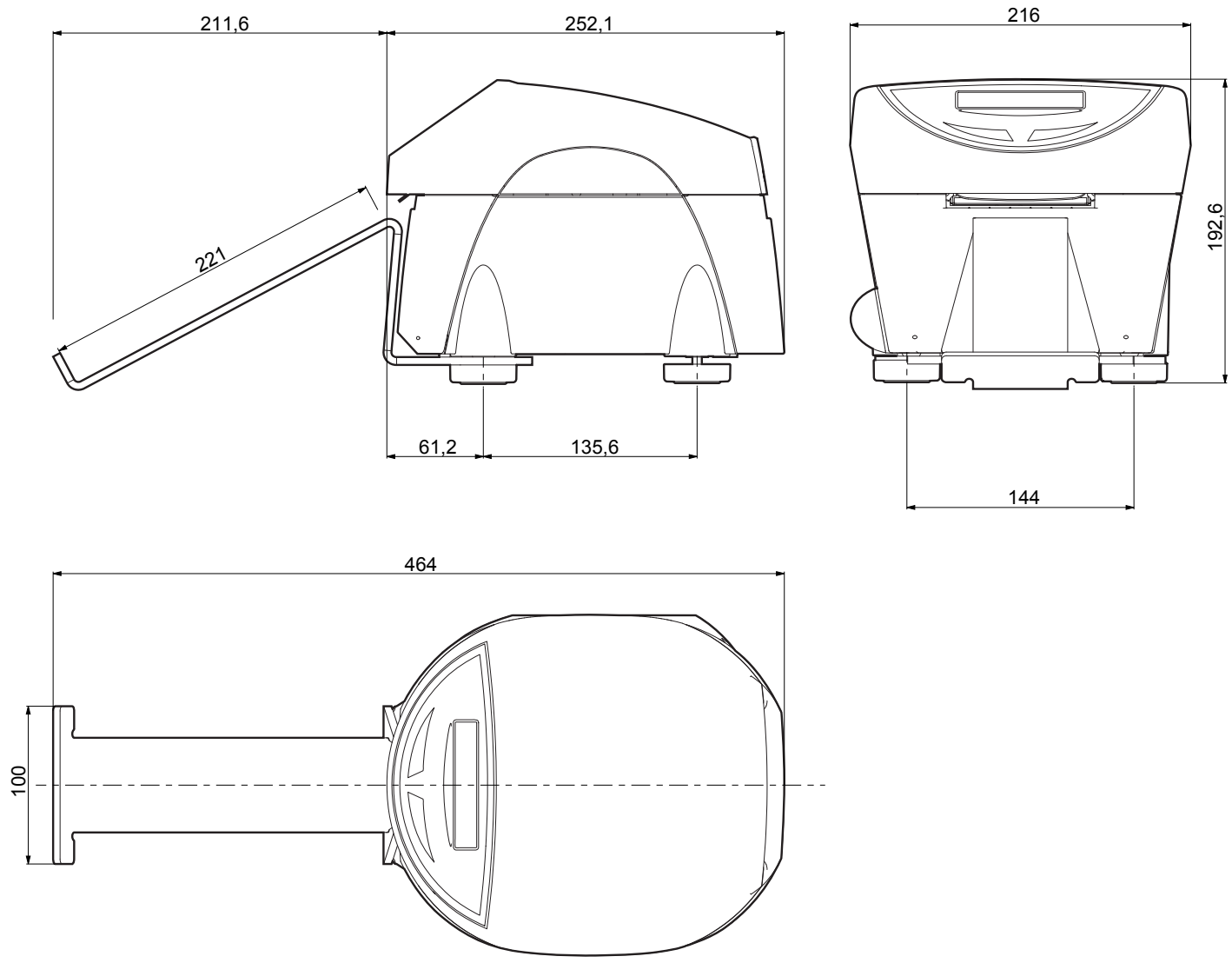


7.4 Device dimensions with ticket tray

TK202, TK203

Length	464 mm
Height	192.6 mm
Width	216 mm

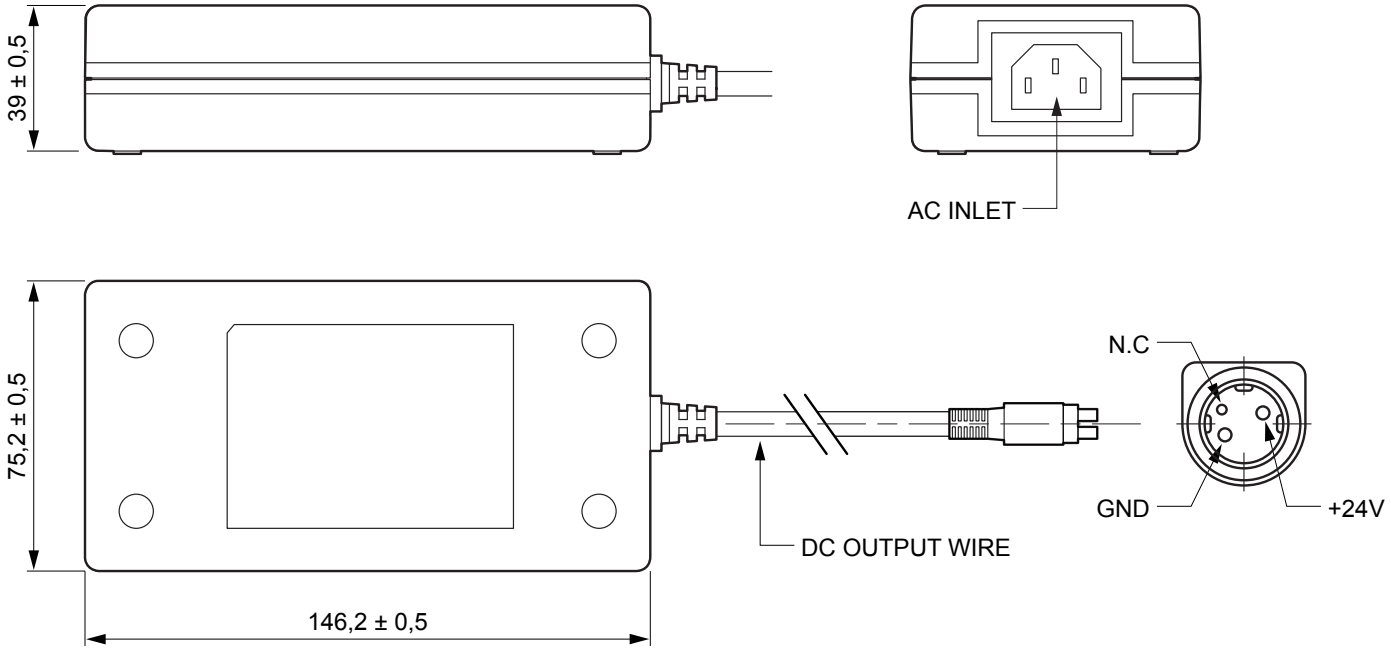
NOTE: All the dimensions shown in the following figure are in millimetres and referred to devices with covers closed and without paper roll.



7.5 Power supply dimensions cod. 963GE020000004

Length	146,2 ± 0,5 mm
Height	39 ± 0,5 mm
Width	75,2 ± 0,5 mm

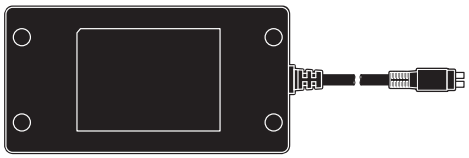
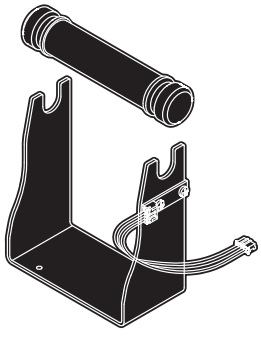
NOTE:
All the dimensions shown in following figures are in millimetres.



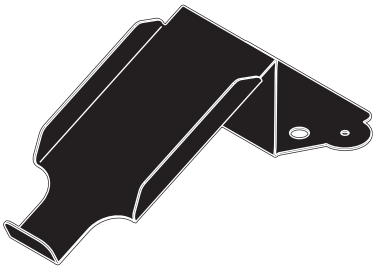
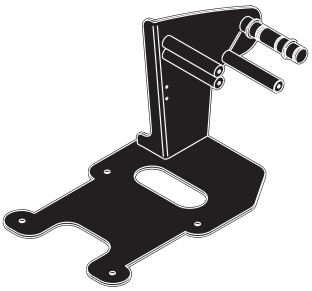
8 ACCESSORIES

The following table shows the list of available accessories for device.

KPM202, KPM203

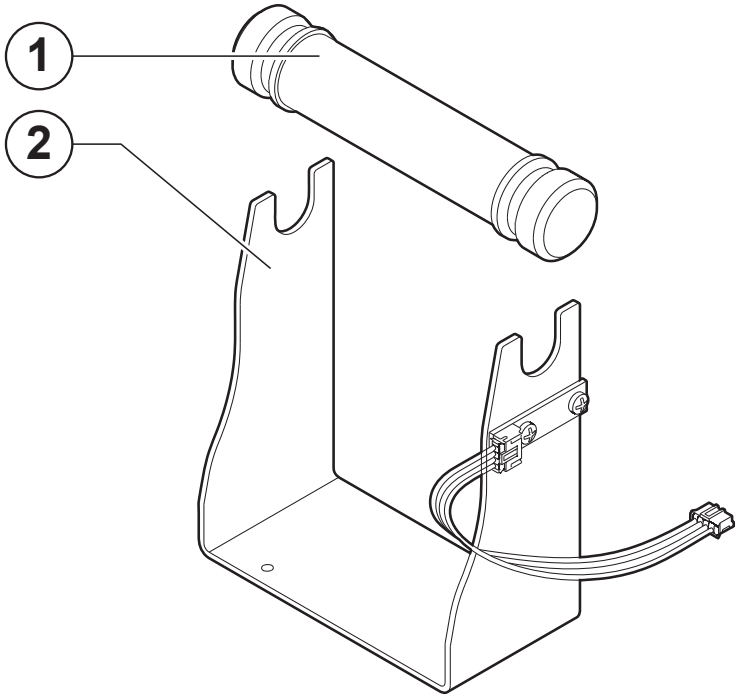
DESCRIPTION	CODE
ADAPTER CABLE FOR POWER SUPPLY (see the paragraph 8.2)	**26600000000348**
ADAPTER CABLE FOR POWER SUPPLY WITH ON/OFF SWITCH (see the paragraph 8.2)	**26600000000349**
POWER SUPPLY (for technical specifications, see the paragraph 7.1)	**963GE020000004** 
PAPER ROLL HOLDER (see paragraphs 8.1)	**974AU010000305** 

TK202, TK203

DESCRIPTION	CODE
TICKET TRAY	**976BB010000003 (black)** **976BB010000002 (white)** **976BD010000001 (transparent)** 
PAPER ROLL HOLDER	**974BA010000312** 

8.1 Paper roll holder

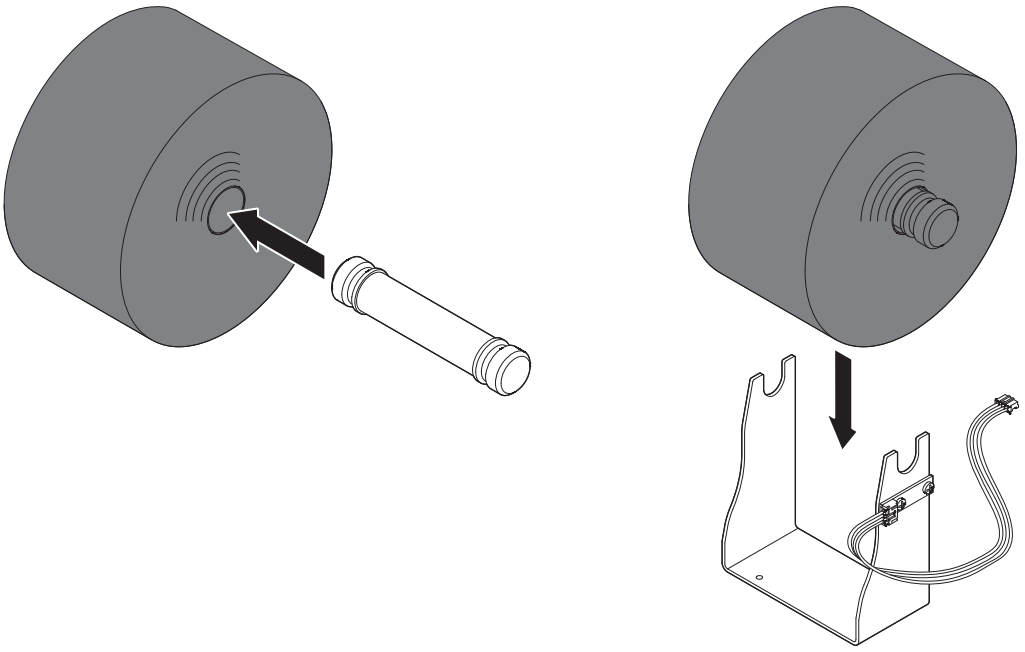
For the device is available an external paper roll holder kit 974AU010000305 (supplied as an accessory). The kit makes it possible to use paper rolls with larger diameter (Øext.150mm max).
The kit includes:
1. Paper roll pin.
2. Paper holder support with near paper end sensor.



For the assembly procedure, proceed as follows:

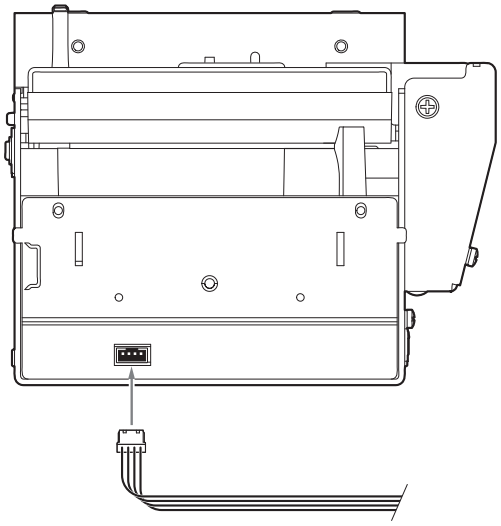
KPM202, KPM203

1



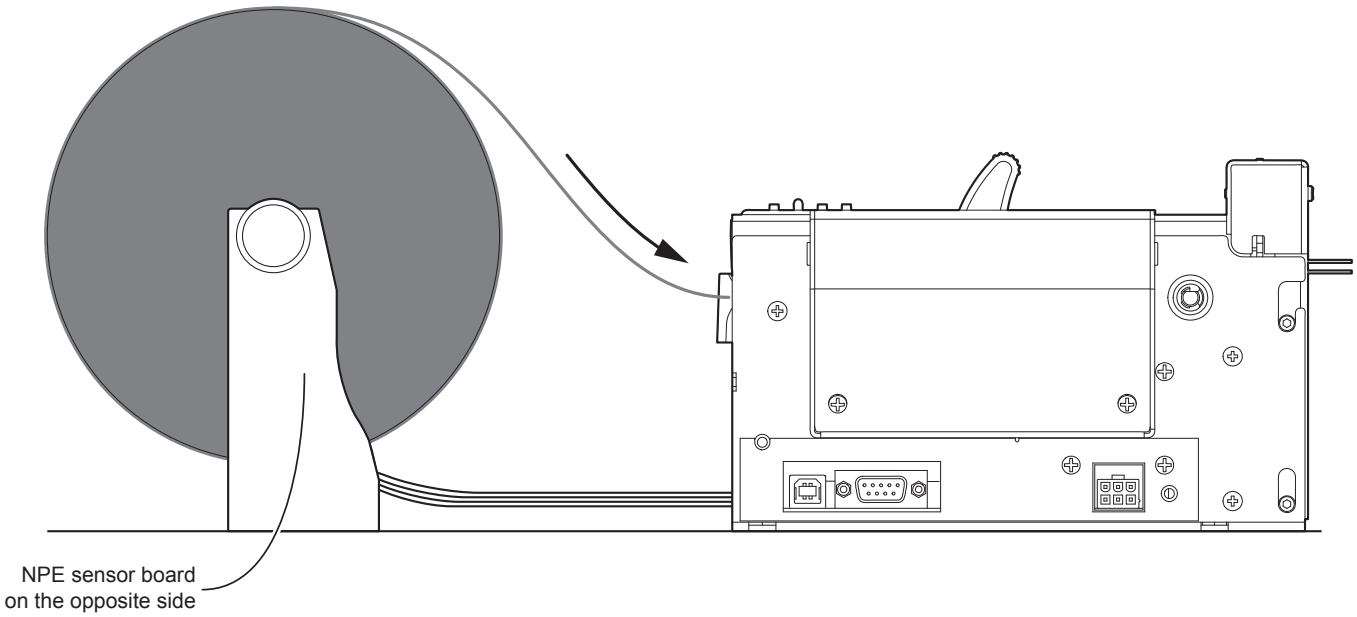
Insert the pin in the paper roll and then
put the asembled roll on the support.

2



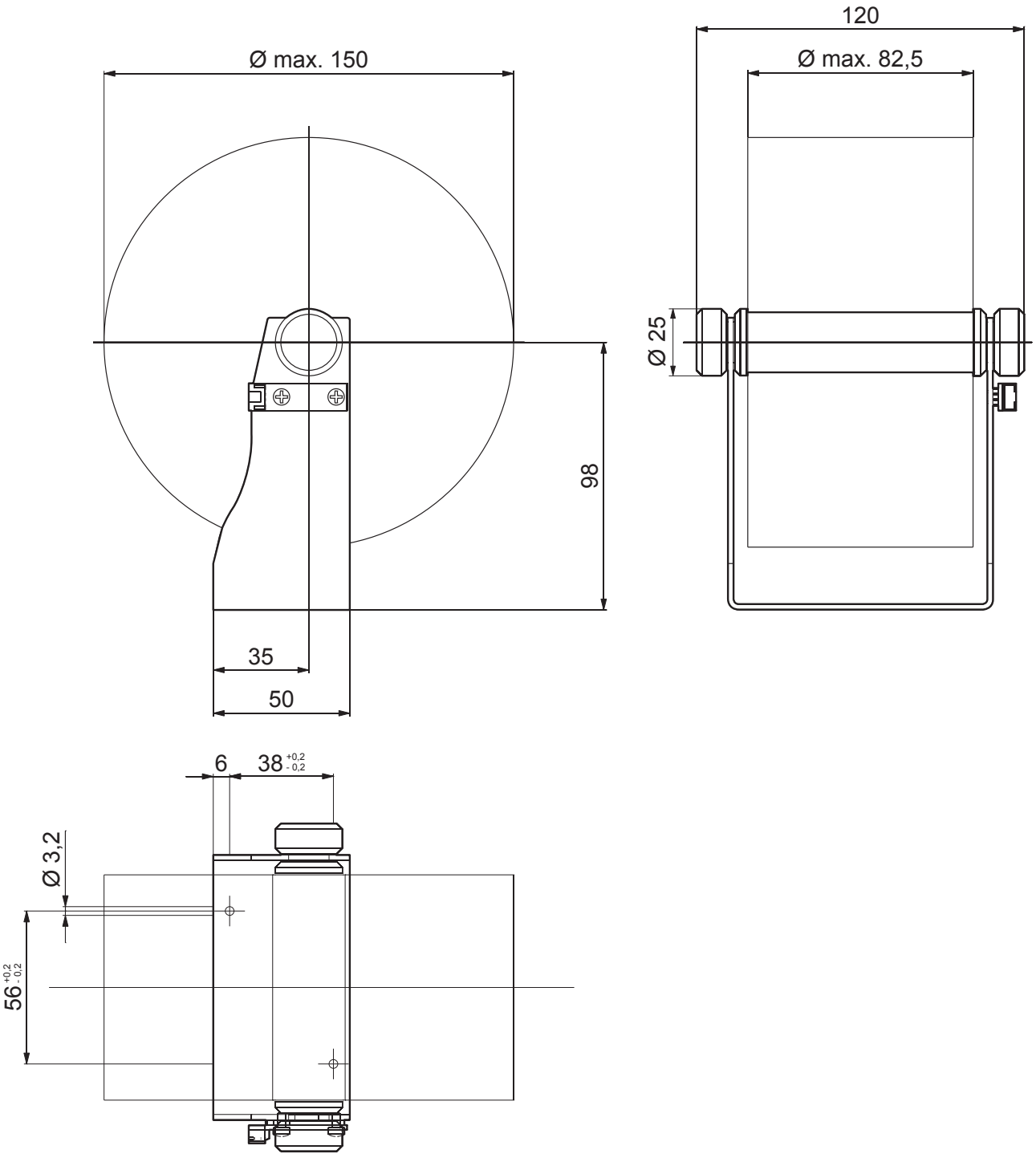
Connect the cable for the near paper end sensor (NPE)
to the device connector.

3



Place the roll holder as shown in figure
and load the paper (see previous paragraphs).

The following figure shows the specifications for holder and paper roll.



NOTES:
All the dimensions in figure are in millimetres.

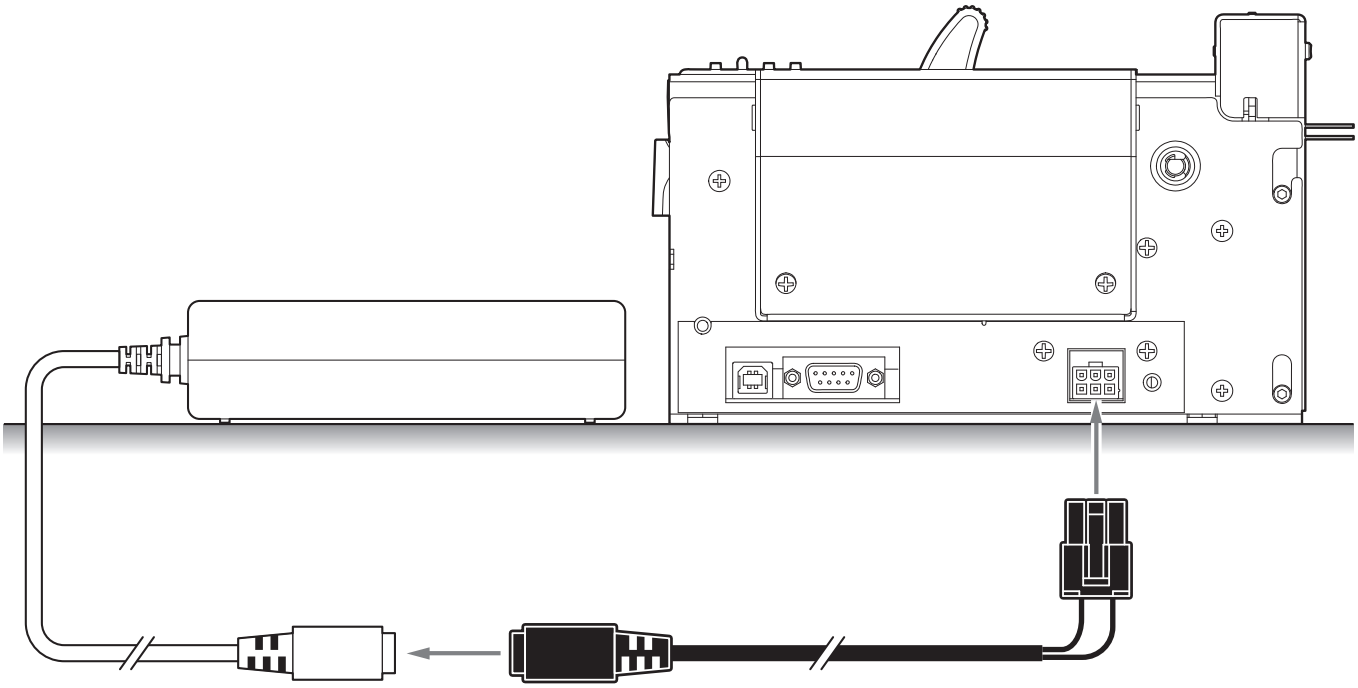
For external rolls diameter higher to 100 mm it's recommended to use a paper pre-tensioning device.

8.2 Adapter cable for power supply

KPM202, KPM203

For the device are available two adapter cable supplied as accessory, for connecting the device to the external power supply unit (cod. 963GE020000004 - optional):
- cod. 26600000000348 : adapter cable
- cod. 26600000000349 : adapter cable with ON/OFF switch

For the assembly procedure, see the following figure:



9 ALIGNMENT

Devices are provided with sensors for the use of alignment notch in order to handle:
- roll of tickets with pre-printed fields and a fixed length;
- FanFold module of tickets with pre-printed fields and a fixed length.

The alignment notch may be formed by
- black mark printed on paper;
- hole between two tickets;
- gap between two labels.

All alignment sensors are “reflection” sensors: this kind of sensor emits a band of light and detects the quantity of light reflected to it.
The presence of the notch is therefore detected by the amount of light that returns to the sensor, considering that the light is reflected by the white paper and absorbed by the black mark.

To use tickets with holes or labels with gap, it is possible to use the same sensors as “transparence” sensors, coupled two by two: a beam of light is emitted by the transmitter sensor and the quantity of light which reaches the opposite receiver sensor is detected.
The presence of hole or gap is detected evaluating the amount of light that arrives to the opposite sensor, considering that the paper doesn’t allow the beam of light to reach the receiver, whereas a gap or a hole lets the light to reach the receiver.

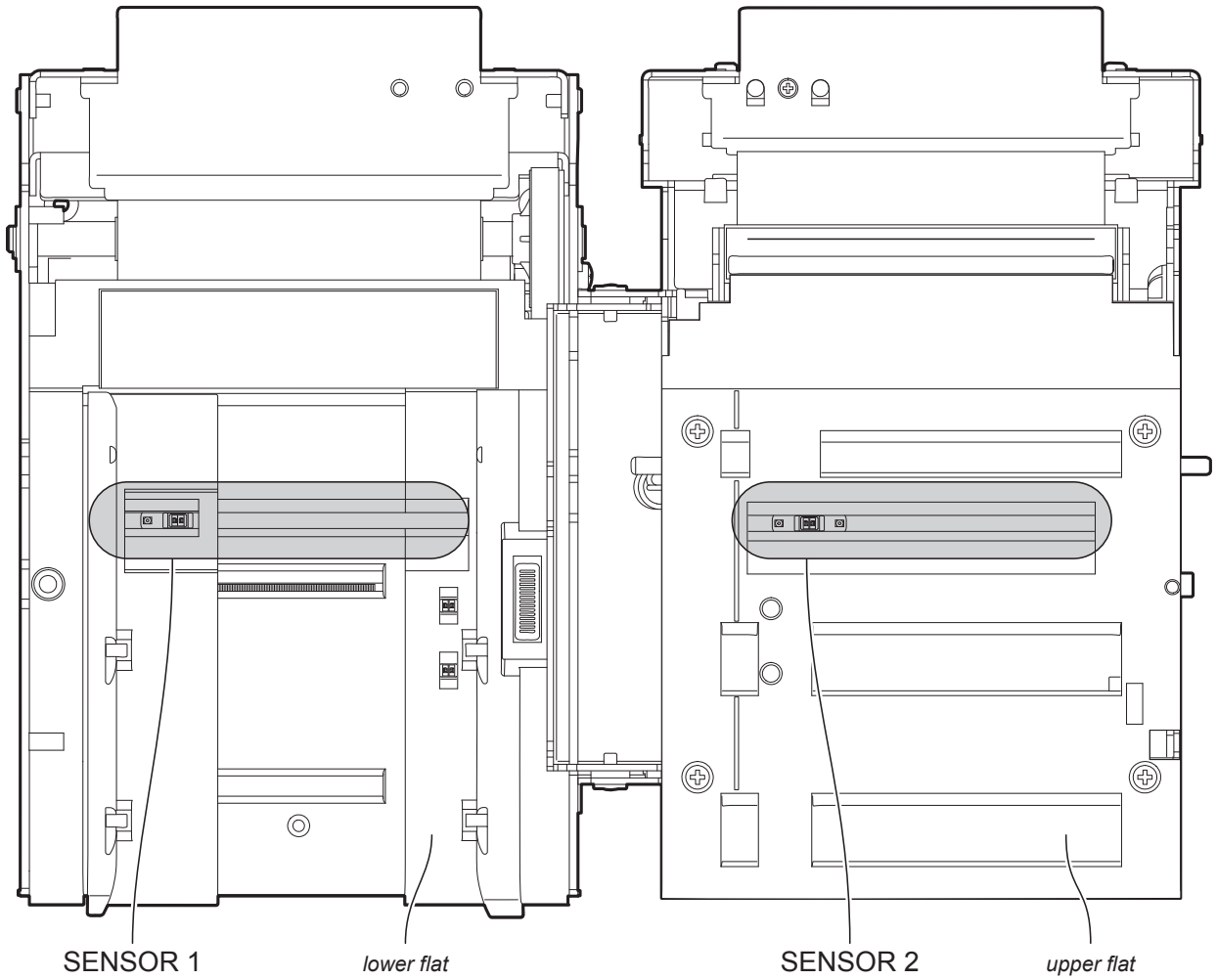
The following paragraphs show how to correctly set the configuration parameters of device in order to assure the alignment.

9.1 Enable alignment

Device is provided with two sensors for alignment, placed as follows:
- one mobile sensor on the lower flat,
- one mobile sensor on the upper flat.

To guarantee the alignment, it is necessary to correctly choose the sensor to use for the notch detection depending on the type of notch and its location on the ticket.
To do this, you must enable the parameter “Notch/B.Mark Position” during the Setup procedure (see chapter 5) and set the correct value of this parameter as described in the following table.

SENSOR USED	VALUE OF THE “NOTCH/B.MARK POSITION” PARAMETER	USING MODE OF SENSORS	NOTCH TYPE
-	Disabled	-	Alignment disabled
1	Bottom	Reflection	Black mark printed on the non-thermal side of paper
2	Top	Reflection	Black mark printed on the thermal side of paper
1 + 2	Transparent	Transparence	Hole between tickets



NOTE:
For ease of understanding, the image shows the two flats represented in the same plane. For some models is represented only the internal printer group without the external plastic chassis.

9.2 Calibration

The sensor calibration occurs automatically and consists in adjusting the quantity of light emitted to match the degree of whiteness of the paper used and the degree of black of the mark printed on paper.

The device automatically performs the self-calibration during the Setup procedure only if the “Notch/B.Mark Position” parameter is set to a value other than “Disabled” (see chapter 5). Otherwise, the self-calibration can be started manually by pressing the S1 key during power-up.

When self-calibration starts, the device performs some paper feeds and then it prints the calibration result and the value of the PWM duty-cicle of the alignment sensor driver so that it can be perform an optimal notch detection:

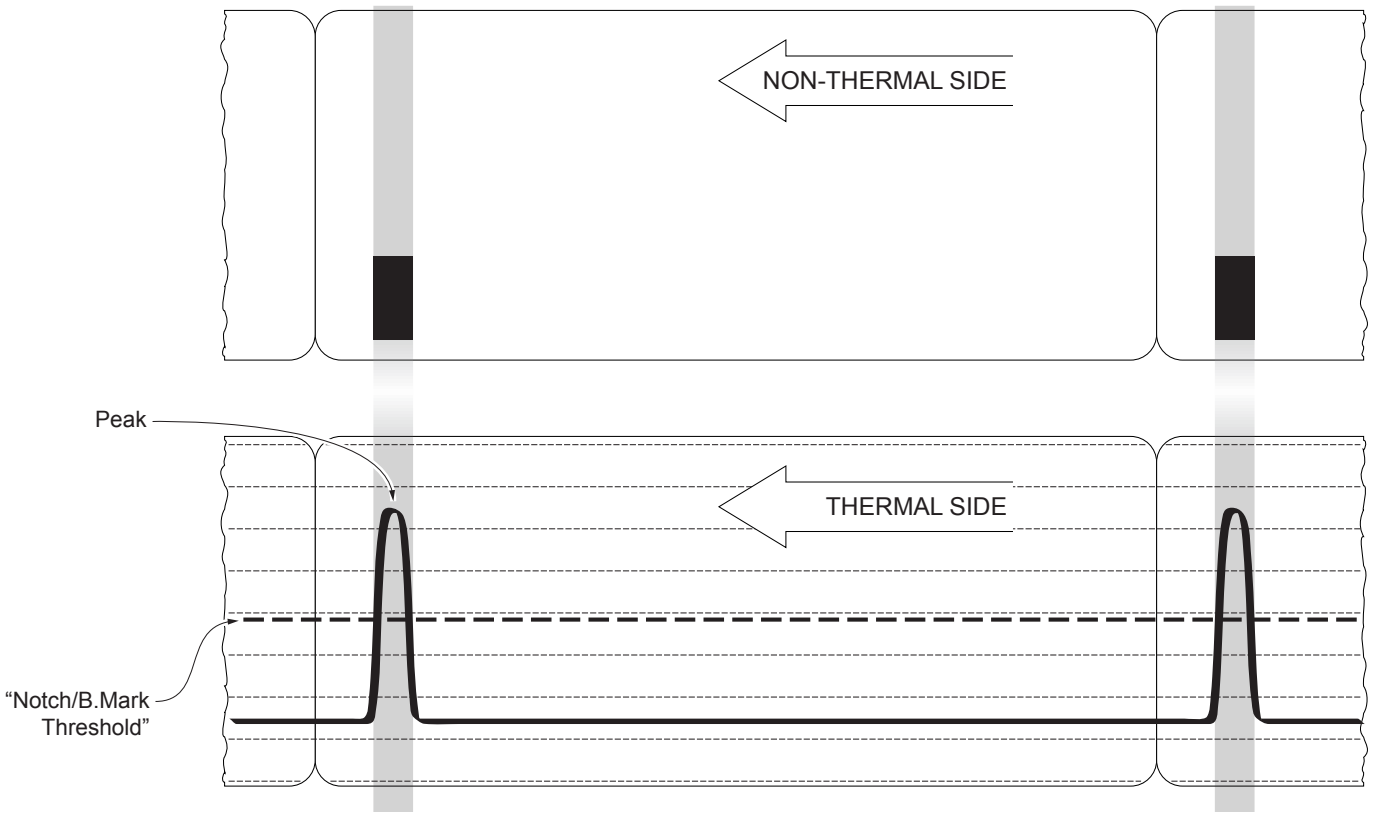
Autosetting Notch : OK
PWM Duty Cycle : 85.3%

The “Autosetting Notch” parameter indicates the result of the self-calibration procedure; OK will appear if it has been successful, NOT OK will appear if the procedure has failed.

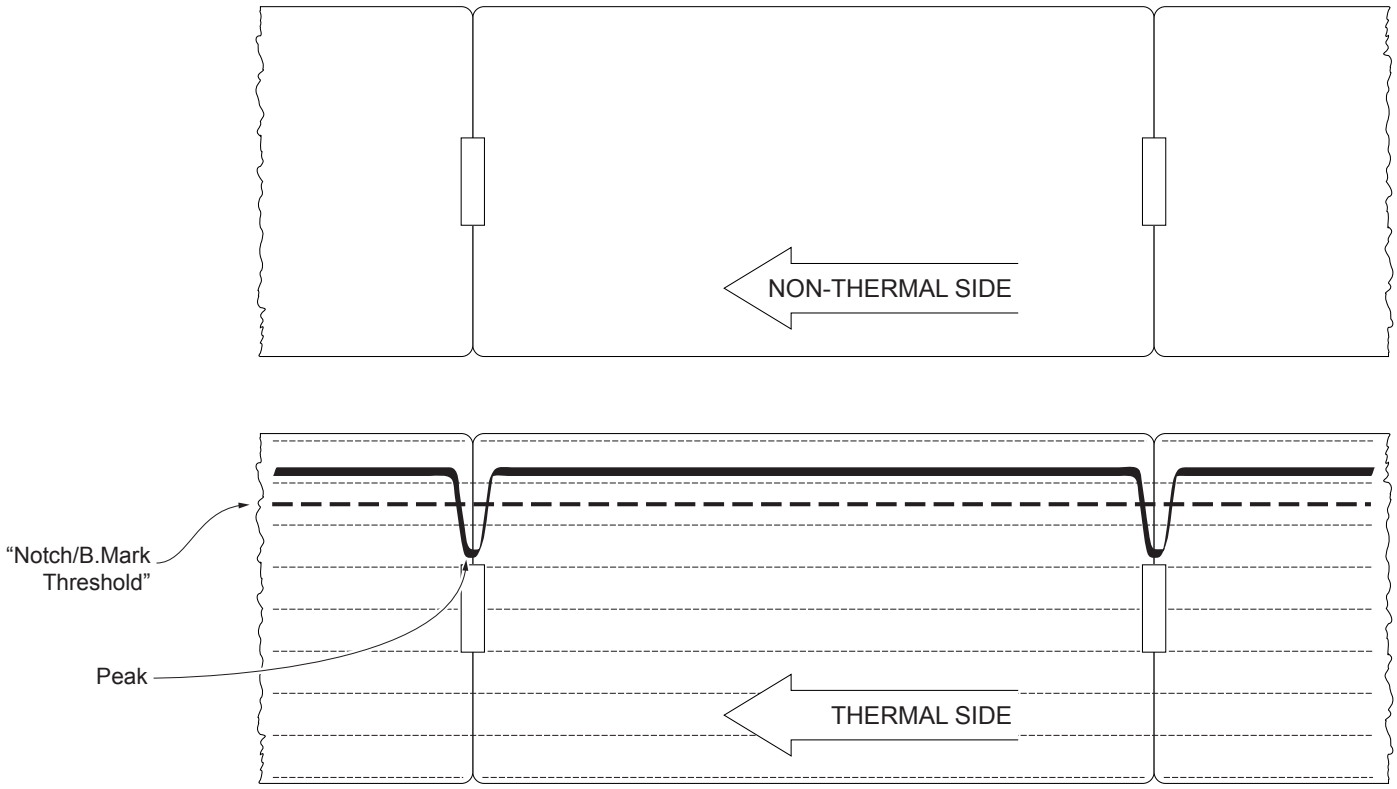
After the printing of the procedure result, the device offers the execution of the function of paper characterization “Characterize Paper” and the change of the “Notch/B.Mark Threshold” parameter which represents the detection threshold of the notch.

Choosing the “Yes” value for the “Characterize Paper” parameter, the device prints a graphic representation (see following figures) of the outgoing voltage of the alignment sensor (expressed as a percentage) and the “Notch/B.Mark Threshold” value. This graphic representation is useful to set the most suitable value to assign to the “Notch/B.Mark Threshold” parameter and then to better identify the optimal threshold value which takes into account the variations of the signal and the small oscillations around zero.

The following figure shows an example of paper with the non-thermal paper printed with black marks: the outgoing voltage is constant while passing the white paper between two notches and presents a peak at each black mark.
In this case, the optimal value for the “Notch/B.Mark Threshold” parameter is placed about half of the peak.



The following figure shows an example of paper with holes: the outgoing voltage is constant while passing the paper between two holes and presents a variation at each hole. In this case, the optimal value for the “Notch/B.Mark Threshold” parameter is placed about half of the variation.



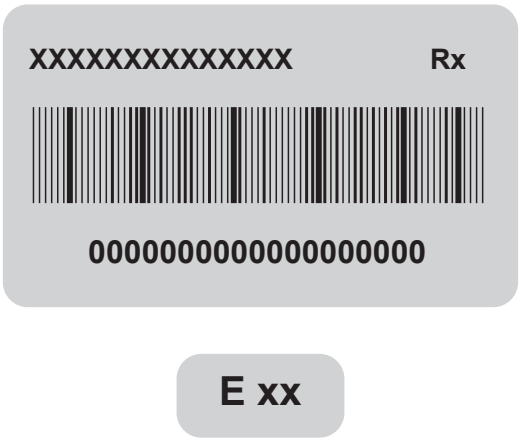
10 TECHNICAL SERVICE

In case of failure, contact the Technical Service by sending an e-mail to support@custom.it detailing:

1. Product code
2. Serial number
3. Hardware release
4. Firmware release
5. Firmware type

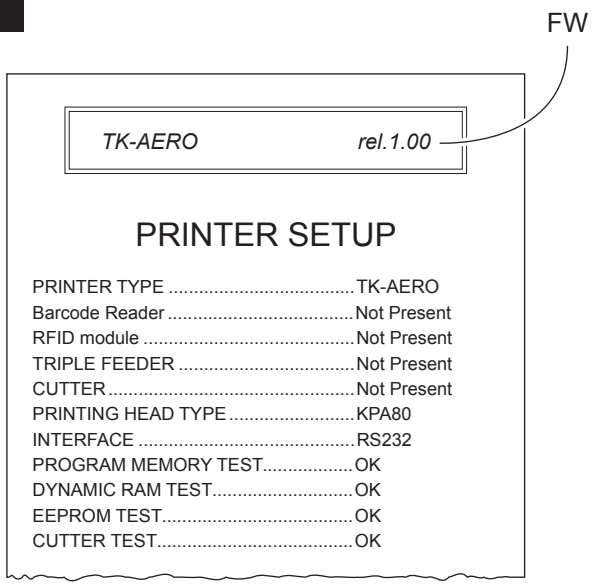
To get the necessary data, proceed as follows:

1



Write down the data printed
on the product label (see previous paragraphs).

2



Print a Setup report (see paragraph 5.1)
The Setup report shows
the firmware release.

3

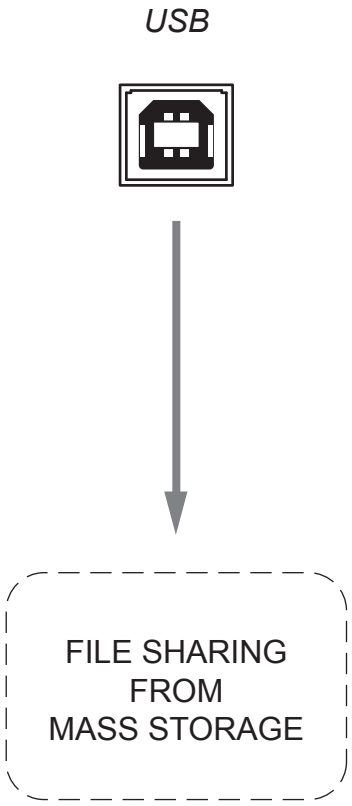
support@custom.it
Customer Service Department

Send an e-mail to the Technical Service,
with the data collected.

11 ADVANCED FUNCTIONS

11.1 File sharing

The device can be connected to a PC with a USB cable.
Through this kind of connection, it is possible to manage drivers, fonts and logos of the device and configure the operating parameters by files sharing from Mass Storage.



11.2 Drivers installation

It is possible to install the new driver update directly into the folder “DRIVER” on the Flash Drive of the device.
You can enter the Flash Drive or the Memory card by files sharing from Mass Storage.

11.3 Setup

It is possible to configure the default parameters for device setup by editing the “Setup.ini” file on the Flash Drive.
You can enter the Flash Drive by files sharing from Mass Storage.
After editing device’s parameter, simply save the “Setup.ini” file to make the modifies activated.

The “Setup.ini” file is a configuration file that contains all the configurable parameters listed in text format and divided into some sections (indicated in square brackets).
The available values for every parameter, are listed after the parameter name. The value marked with the symbol ‘ * ’ is the default one. To modify device’s parameters, change the numeric value after the name of parameters. To set the parameter to the default value, change the numeric value with the symbol D.

The “Setup.ini” file permits the configuration of the following parameters:

[PRINT]

Printer Emulation	0*, 1, 2	0 = SERVICE 1 = BTP 2 = ATB		
Print Mode	0*, 1	0 = Normal 1 = Reverse		
Speed / Quality	0, 1, 2*	0 = High Quality 1 = Normal 2 = High Speed		
Paper Threshold	0, 1, 2, 3*, 4, 5, 6	0 = 30 % 1 = 40 % 2 = 50 %	3 = 60 % 4 = 70 % 5 = 80 %	6 = 90 %
Notch/B.Mark Position	0, 1, 2, 3*	0 = Disabled 1 = Top 2 = Bottom 3 = Trasparence		
Notch/B.Mark Threshold	0*, 1, 2, 3, 4, 5, 6	0 = 30 % 1 = 40 % 2 = 50 %	3 = 60 % 4 = 70 % 5 = 80 %	6 = 90 %
Barcode ID 4	0*, 1	0 = Code128 1 = DataMatrix		
Vertical Scale [%]				
Presenter Offset [mm]				
Align Ticket	0*, 1, 2, 3	0 = Disabled 1 = Power On 2 = Autoload 3 = P.On/Load		
RFID encoding	0*, 1	0 = AEA standard 1 = Custom01		

USB VirtualCOM	0*, 1	0 = Disabled 1 = Enabled		
ATB RePrint after ERR	0*, 1	0 = Disabled 1 = Enabled		
Near Paper End	0*, 1	0 = Disabled 1 = Enabled		

[INTERFACE]

RS232 Baud Rate	1, 2, 3, 4, 5, 6, 7, 8*	1 = 1200 bps 2 = 2400 bps 3 = 4800 bps	4 = 9600 bps 5 = 19200 bps 6 = 38400 bps	7 = 57600 bps 8 = 115200 bps
RS232 Data Length	0*, 1	0 = 8 bits/chr 1 = 7 bits/chr		
RS232 Parity	0*, 1, 2	0 = None 1 = Even	2 = Odd	
USB Mass Storage	0*, 1	0 = Disabled 1 = Enabled		
USB Address Number	0*, 1, 2, 3, 4, 5, 6, 7, 8, 9	0 = 0 1 = 1 2 = 2 3 = 3	4 = 4 5 = 5 6 = 6 7 = 7	8 = 8 9 = 9

Part Number : 76200000002600 Rev.1.50

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